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INNOVATIONS IN SAFETY SINCE THE 2010 MACONDO INCIDENT

OVERSIGHT HEARING

BEFORE THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTEENTH CONGRESS

FIRST SESSION

Wednesday, April 22, 2015

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OVERSIGHT HEARING ON INNOVATIONS IN SAFETY SINCE THE 2010 MACONDO INCIDENT

Wednesday, April 22, 2015
U.S. House of Representatives
Committee on Natural Resources
Washington, DC

The committee met, pursuant to notice, at 9:35 a.m., in room 1324, Longworth House Office Building, Hon. Rob Bishop [Chairman of the Committee] presiding.

Present: Representatives Bishop, Gohmert, Lamborn, Wittman, Lummis, LaMalfa, Westerman, Graves, Newhouse, Hice, MacArthur, Mooney, Hardy; Grijalva, Costa, Tsongas, Huffman, Torres, Dingell, Gallego, and Capps.

The CHAIRMAN. I will call this committee meeting to order to hear the testimony on innovations in safety since the 2010 Macondo incident.

I am going to have one piece of business I am requested to make formal right now. I just want to note, as far as decorum of our hearings are to be maintained, that there be no applause or any other kind of disruption regarding the testimony that is given here today. It is important that we respect the decorum and rules of the committee, and also the House, and allow Members and the public to hear our proceedings.

So, the Chairman does have an option at any point to halt the hearings and request the hearings come to order. Once the Chairman has restored order, if a second outburst is noted, or if order is not maintained, the Chairman does have the discretion to have those creating the disturbance removed.

Under Committee Rule 4(f), oral opening statements at the hearing are limited to the Chairman and the Ranking Minority Member and the Vice Chair, and a designee of the Ranking Minority Member.

Mr. Sablan still is not healthy, right? OK. We hope that happens very quickly.

This will allow us to hear from our witnesses sooner, and help Members to keep their schedules. Therefore, I ask unanimous consent that all other Members' opening statements be made part of the hearing record if they are submitted to the clerk by 5:00 p.m. today.

[No response.]

The CHAIRMAN. Hearing no objection, it will be so ordered. Let me recognize myself, if I could—beginning with my opening statement.

And before I begin, I have two acknowledgments that I would like to do. I think this is the first time we have met since Representative Duncan's father has passed away. And we remember him and give our sympathy to Mr. Duncan at this time, as well.

I also think it is appropriate to acknowledge the 11 workers who lost their lives in the Macondo tragedy and their families. I am sure that every time we have another anniversary, their families relive those agonizing days. They have our sympathy and our prayers at the same time.

It is appropriate to acknowledge the damage that was caused. Hopefully this oversight hearing will provide important information on how the government and the industry are and will continue to work together to protect lives and the environment and prevent such tragedies from happening in the future.

STATEMENT OF THE HON. ROB BISHOP, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

The CHAIRMAN. It has been 5 years since the Macondo spill in the Gulf, and a great deal has been accomplished in that period of time. Moving forward, improvements to safety and responsible offshore energy development will require the continued involvement of both the private and the public sectors working collaboratively. And that is the key word.

Today's hearing will certainly cover this important interchange, and our discussions will focus on the industry innovations, which have been the initial driving force behind most, if not all, of the regulatory and operational changes that have occurred in the industry since 2010.

Early on, American energy producers immediately took action to develop new standards, recommended practices, and audits related to safety and environmental management systems. This week in Houston, Secretary Jewell applauded the work of the oil and gas industry in improving offshore drilling safety. We appreciate her recognition of that fact.

The Department of the Interior's response, however, involved subagencies dissecting into separate subagencies, resulting in the revenue collection office now known as the Office of Natural Resource Revenue, the Bureau of Ocean Energy Management (BOEM), and the Bureau of Safety and Environmental Enforcement (BSEE). So I don't mean to say that the Department of the Interior spent all its efforts of the past 5 years rearranging the deck chairs, even though it is questionable if all these efforts really have resulted in improved safety and environmental protections. Unfortunately, that is a subject for a different day.

But, for today, following the industry's lead, the Department has issued several regulations, including a drilling safety rule, workplace rules, and, a couple of weeks ago, what we referred to as the blowout preventer rule.

As we hear testimony today from the witnesses, I and others will be listening carefully to the witnesses' opinions on whether this Department has struck the right balance, in its proposed and final regulations, between ensuring safety, protecting the environment, and enabling the private enterprise to responsibly develop the Nation's resources for the benefit of taxpayers.

After all, the offshore bonuses and rental payments and royalties, if you totaled them all together, that is 7.4 billion—with a "B"—in 2014. And, without that money, the Federal Government

would simply be forced to make up that revenue, either in increased taxes, or increased deficits.

So, rather than seek responsible balance, Federal regulatory agencies tend at times to overreach, having the ultimate impact of that overreach: stifling innovation, undermining safety, and restricting development. So I hope in this hearing we can see if that is, indeed, the case, and if it needs to be remedied.

Additionally, Congress has often been criticized for not doing enough in the aftermath of this incident. It is a cute argument, it is a demagogic argument. And, in many cases, it is simply a myth. Congress has enacted laws that have set policy. Federal agencies have promulgated regulations. Congress funds those initiatives. Federal agency promulgates rules after extensive public input. Sometimes it is important for Congress to actually go deeper into understanding and recognizing what the rules will be, to try to make sure that we are moving in the proper direction.

Industry participants conduct their business in compliance with the regulations, or they face the penalties for failing to do so. Congress does conduct oversight hearings of the Federal agencies to determine if the agency is in compliance with the enabling statutes, and it is incumbent upon regulated industries to take it upon themselves to self-regulate, as well, through the issuance of their standards and their best practices. Sometimes we need to make sure that those changes take place faster than the agencies themselves can react.

So, just relating to the Macondo incident itself, this committee alone has had 16 hearings since the incident, ranging from budget matters for the Department to the restoration of the Gulf. And as we focus on the innovations in safety since 2010, the title of this hearing, we are going to have to give credit where credit is due, and look for opportunities to improve, as new technologies are made commercially available and as safety innovations are going to be developed.

So, I look forward to the hearing. I look forward to those witnesses who have been here, and our guests, and I appreciate all of your attention and efforts.

[The prepared statement of Mr. Bishop follows:]

PREPARED STATEMENT OF THE HON. ROB BISHOP, CHAIRMAN, COMMITTEE ON NATURAL RESOURCES

Five years since the Macondo spill in the Gulf, there is widespread recognition that a great deal has been accomplished to address safety and environmental issues raised by this tragedy. Moving forward, improvements to safety and promoting responsible offshore energy development will require the continued involvement of both private and public sectors working collaboratively.

While today's hearing will certainly cover this important interchange, our discussion will focus on industry innovations, which have been the initial driving force behind most, if not all, regulatory and operational changes that have occurred in the industry since 2010. Early on, American energy producers immediately took action to develop new standards, recommended practices, and audits related to safety and environmental management systems. This week in Houston, Secretary Jewell applauded the work of the oil and gas industry in improving offshore drilling safety.

The Department of the Interior's response, however, involved subagencies dissecting into separate subagencies, resulting in the revenue collection office now known as the Office of Natural Resources Revenue, the Bureau of Ocean Energy Management (BOEM), and the Bureau of Safety and Environmental Enforcement (BSEE).

I do not mean to suggest that the Department of Interior spent all of its efforts these past 5 years rearranging the deck chairs, even though it is questionable if all of that effort really has resulted in improved safety and environmental protections. But, that is a subject for a different day.

Following industry's lead, the Department has issued several regulations, including the drilling safety rule and the workplace safety rule and its updates (SEMS I and SEMS II). Within the past couple of weeks, the Department released its Well Control Rule, commonly referred to as the "Blowout Preventer Rule."

As we hear testimony today from the witnesses, I and others will be listening carefully to the witnesses' opinions on whether the Department has struck the right balance, in its proposed and final regulations, between ensuring the safety of the offshore workplace and protecting the environment, *and* enabling private enterprise to responsibly develop our Nation's resources for the benefit of the taxpayers.

After all, offshore bonuses, rental payments, and royalties totaled approximately $7.4 billion in 2014. Without that money, the Federal Government would be forced to make up revenue through either increasing taxes elsewhere or adding to mammoth deficits. Rather than seek reasonable balance, Federal regulatory agencies tend to overreach, having the ultimate effect of stifling innovation, undermining safety, and restricting development. I look forward to hearing from the witnesses to see if that is indeed the case.

Additionally, Congress has been criticized for not doing enough in the aftermath of the Macondo incident. A brief reminder about how the process is supposed to work is in order. Congress enacts laws that set policy and empowers Federal agencies to promulgate regulations for the more detailed governance and enforcement. Congress funds the initiatives. The Federal agencies promulgate rules after extensive public input from all stakeholders willing to participate.

Industry participants conduct their business in compliance with those regulations or face the penalties for failing to do so. Congress conducts oversight of the Federal agencies to determine the agencies' compliance with the enabling statutes. It is incumbent upon regulated industries to take it upon themselves to self-regulate as well through the issuance of standards and best practices.

Just relating to the Macondo incident, this committee alone has held 16 hearings since the incident, ranging from budget matters for the Department to restoration of the Gulf. As we focus on the "Innovations in Safety Since the 2010 Macondo Incident," the title of this hearing, let's give credit where it is due and look for opportunities to improve as new technologies are made commercially available and new safety innovations are developed.

The CHAIRMAN. And, with that, I will turn to the Ranking Member for any opening statement he may wish to give.

STATEMENT OF THE HON. RAÚL M. GRIJALVA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA

Mr. GRIJALVA. Thank you, Mr. Chairman, and thank you for holding this hearing.

The Deepwater Horizon catastrophe was a topic that we didn't get a chance to discuss very often in the previous Congress, so I appreciate your willingness to open this conversation back up on the fifth anniversary of the spill.

Unfortunately, the title of this hearing, and the testimony of some of today's witnesses makes me feel like it is a big pat-on-the-back session, rather than real oversight. We have three industry witnesses here to tell us what a great job industry has done, one agency witness to tell us what a great job the agency has done, and one witness to tell us about the impacts of the greatest environmental disaster in our country's history.

If we really want to look at whether the industry is safer, we would invite the families of the aforementioned 11 workers who perished aboard that rig, or the families of the 12 offshore workers who have been killed by offshore accidents since Deepwater

Horizon. We would invite the oystermen who have seen their harvests decline by two-thirds since the spill. We would invite the fishermen who are still pulling up red snapper with skin lesions, and shrimp with no eyes. We would invite the hotel and restaurant owners who still find massive tar mats on the beaches, and who are more vulnerable to floods and hurricanes after years of barrier islands shrinking. We would invite the people suffering health impacts from the persistent oil that keeps appearing in their waterways and on their shores.

I don't doubt there have been some improvements in the past 5 years. But we need to ask ourselves how prepared are we for the next human error or the next failed piece of machinery, not just how hard we are working to prevent Deepwater Horizon from repeating itself. We shouldn't be lulled into a false sense of security. There were 40 relatively quiet years after our first major offshore blowout. We were assured that this showed how safe everything was. So, 5 years without a blowout isn't the end of the story. It certainly doesn't convince me that we should allow offshore drilling in the Arctic or in the Atlantic. We should not be playing Russian roulette with our environment and coastal tourism economies.

And where drilling is occurring, there is a lot more that we can do. While industry and the Interior Department may be patting themselves on the back, Congress should be working overtime to make up for its failure to act after the Deepwater Horizon disaster. That failure is not something we should be proud of. We need to raise the liability limit for oil spills and enact tough penalties for offshore safety and environmental violations.

Unfortunately, industry will always have an incentive to cut corners and expand into more hostile environments, and the efforts of regulators will always be uneven. I do not believe that offshore drilling will ever be safe enough to rest on our laurels. The Majority might want this hearing to be the last chapter in this saga; if we are not careful, it could just be a prelude.

We should be moving toward renewable, carbon-free technologies like solar, geothermal, and offshore wind. Unfortunately, this is not the direction we seem to be going. Hopefully, there will be time to change before the next great offshore disaster occurs.

And, with that, Mr. Chairman, thank you, and I yield back.

[The prepared statement of Mr. Grijalva follows:]

PREPARED STATEMENT OF THE HON. RAÚL M. GRIJALVA, RANKING MEMBER, COMMITTEE ON NATURAL RESOURCES

Thank you, Mr. Chairman, and thank you for holding this hearing. The Deepwater Horizon catastrophe was a topic that we didn't get a chance to discuss very often in the previous Congress, so I appreciate your willingness to open this conversation back up on the fifth anniversary of the spill.

Unfortunately, the title of this hearing and the testimony of some of today's witnesses feel like a big pat-on-the-back session rather than real oversight. We have three industry witnesses here to tell us what a great job industry has done, one agency witness to tell us what a great job the agency has done, and only one witness to tell us about the impacts of the greatest environmental disaster in our country's history.

If we really wanted to look whether the industry is safer, we would invite the families of the 11 workers who perished aboard that rig, or the families of the 12 offshore workers who have been killed by offshore accidents *since* Deepwater Horizon.

We would invite the oystermen who have seen their harvests decline by two-thirds since the spill. We'd invite the fishermen who are still pulling up red snapper with skin lesions and shrimp with no eyes. We would invite the hotel and restaurant owners who still find massive tar mats on the beaches and who are more vulnerable to floods and hurricanes after years of barrier islands shrinking. We would invite the people suffering health impacts from the persistent oil that keeps appearing in their waterways and on their shores.

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We shouldn't be lulled into a false sense of security. There were 40 relatively quiet years after our first major offshore blowout. We were assured that this showed how safe everything was.

So 5 years without a blowout isn't the end of the story. It certainly doesn't convince me that we should allow offshore drilling in the Arctic or in the Atlantic. We should not be playing Russian roulette with our environment and coastal tourism economies.

And where drilling is occurring today, there is a lot more we can do. While industry and the Interior Department may be patting themselves on the back, Congress should be working overtime to make up for its failure to act after the Deepwater Horizon disaster. That failure is not something we should be proud of.

We need to raise the liability limit for oil spills and enact tough penalties for offshore safety and environmental violations. Unfortunately, industry will always have an incentive to cut corners and expand into more hostile environments, and the efforts of regulators will always be uneven. I do not believe that offshore drilling will ever be safe enough to rest on our laurels. The Majority may want this hearing to be the last chapter in this saga; if we are not careful, I fear it could just be a prelude.

We should be moving away from offshore drilling and toward cleaner, safer, carbon-free technologies like solar, geothermal and offshore wind. Unfortunately, that is not the direction we seem to be going. Hopefully there is still time to change before the next great offshore disaster occurs.

Thank you Mr. Chairman, and I yield back.

The CHAIRMAN. With that I now turn to the Vice Chair, Mrs. Lummis, for her opening statement.

STATEMENT OF THE HON. CYNTHIA M. LUMMIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WYOMING

Mrs. LUMMIS. Thank you, Mr. Chairman. And thank you for holding this hearing on the safety in offshore energy production. As has been said, this marks the 5-year anniversary this week of the horrific tragedy aboard the offshore oil platform, Deepwater Horizon, where the explosion took 11 lives and devastated families. The ecological damage was extensive. The tragedy was like a shot heard 'round the world, in terms of how we look at offshore energy safety, and rightly so.

Fixing the safety shortfalls that led to the explosion isn't just the right thing to do for those workers, their families, and the environment. It is a necessity, going forward, because offshore energy production is a necessity. Offshore energy production is essential for the United States to achieve lasting energy security, which also brings about economic security, national security, and job security for the men and women in the offshore industry.

So, the answer is not to hold up offshore energy production. The answer is to make offshore energy production safer than it has ever been in history for both the people and the environment. We must proceed deliberately and responsibly toward safety improvements,

relying on science, innovation, and measurable results. We need to encourage creativity and innovation that is ingrained in American culture and tradition.

I thank our panels for coming today to discuss strides made both by industry and the regulatory community since Deepwater Horizon occurred. We must make sure the Federal regulatory framework that was developed in response to the tragedy stays nimble and keeps pace with the technological innovation that has occurred since then. Striking this balance between worker and environmental safety and our energy security will be an ongoing challenge, but America is up to the challenge, as I believe today's panel will begin to reveal.

Thank you. Mr. Chairman.

[The prepared statement of Mrs. Lummis follows:]

PREPARED STATEMENT OF THE HON. CYNTHIA M. LUMMIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WYOMING

Thank you Mr. Chairman, and thank you for holding this hearing on safety in offshore energy production.

April 20 marked the 5-year anniversary of the horrific tragedy aboard the offshore oil platform known as the Deepwater Horizon. The explosion took the lives of 11 Americans. The ecological damage was extensive. The tragedy was a game changer in terms of how we look at offshore energy safety, and rightly so.

Fixing the safety shortfalls that led to that explosion isn't just the right thing to do for the workers, their families, and the environment. It's a necessity, and that is because offshore energy production is a necessity. Offshore energy production is necessary for the United States to achieve lasting energy security, which also means economic security, national security, and job security for the men and women in the offshore industry.

Holding up offshore energy production is not a solution. A solution is rolling up our sleeves and persevering to make offshore energy production as safe as possible, both for people and the environment. We must proceed deliberately and responsibly toward safety improvements, relying on science and measurable results. We need to encourage the creativity and innovation that is ingrained in American culture and tradition.

I thank our panels for coming today to discuss the strides made since the Deepwater Horizon tragedy by both industry and the regulatory community. We must make sure the Federal regulatory framework that was developed in response to the tragedy stays nimble and able to keep pace with technological innovation. Striking this balance between worker and environmental safety and our energy security will be an ongoing challenge, but America is up to the challenge as I believe today's panels will show.

Thank you Mr. Chairman. I yield back.

The CHAIRMAN. I thank the Vice Chair.

At the request of the Ranking Member, I will now recognize Mrs. Capps to—for an opening statement.

STATEMENT OF THE HON. LOIS CAPPS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mrs. CAPPS. Thank you very much, Mr. Chairman, and thank you, Ranking Member Grijalva, for giving me this opportunity to speak. And I want to thank each of you for acknowledging that this is roughly the 5-year anniversary of the tragic Deepwater Horizon spill. And I also want to acknowledge that this is Earth Day, and that is an annual occurrence on this date every year that came about after Senator Gaylord Nelson visited my coastline, the coastline that I am privileged to represent, in 1970 and saw, even a year

later, the tragedy that was the 1969 oil spill of Platform A that I represent.

So, I do represent a district that experienced the brunt of the 1969 Santa Barbara oil spill. Our coastline still has multiple oil platforms visible from our shoreline. And many of my constituents and I have a very strong and personal interest in offshore drilling safety.

One of the issues that I do not want to lose sight of in this discussion today is the importance of safety in both deepwater and shallow water drilling. The Interior Department and industry have understandably focused most of their efforts in the last 5 years on improving deepwater drilling safety, because we saw firsthand just how unprepared we were for something terrible to happen 1 mile under the ocean. As companies continue to move into deeper and deeper water, they will encounter more and more dangerous conditions and greater technical difficulties. So continual focus on deepwater drilling is absolutely essential.

But the industry still works in shallow waters, as well. And that is what I don't want to lose sight of in this hearing. After Deepwater Horizon, we were told by industry that, while new safety standards might be appropriate for deepwater, things were much safer in shallow water operations. While the rest of the country watched oil billowing uncontrollably into the Gulf of Mexico, wondering whether offshore drilling could ever be done safely at all, shallow water drillers criticized the Interior Department for focusing more on responding to the spill than issuing new drilling permits. For the record, I think the Department of the Interior made the right choice, and the only choice, in that situation, but clearly, not everyone agreed.

However, in November of 2010, barely 7 months after the blowout began, an executive for a shallow water drilling contractor named Hercules Offshore wrote an editorial touting the safety of their operations. In this editorial he wrote, and I quote, "We've been drilling shallow water wells safely and without major incident since 1949." The contractor was apparently referring only to waters in the U.S. portion of the Gulf of Mexico, because both the 1969 Santa Barbara and the 1979 Ixtoc blowouts occurred in water less than 200 feet deep.

But he went on to say, again I quote, "Shallow water drilling takes place in mature, predictable, well-known reservoirs. We use proven technologies and well-controlled equipment with our blowout preventers located right on the rig, allowing for immediate access and constant inspection and maintenance." This sounds great. But I would like permission to show you something.

[Slide]

Mrs. CAPPS. If you can see it, this is—despite the initial similarities, this is not a picture of Deepwater Horizon. It is a picture from July 2013 of a blowout and explosion on a shallow water rig operated by Hercules Offshore, the same company whose executive wrote that editorial about the safety of shallow water operations. The pictured rig, which you see behind me, was operating in 154 feet of water, using proven technologies and a blowout preventer right on the rig that could be immediately accessed and constantly inspected.

Thankfully, no one was killed during this event and there was not a major oil spill. But this was only one of several major shallow water incidents we have seen in the past 5 years, and lives have been lost in some of those incidents. And because these operations are much closer to the shoreline, if a spill does occur on one of them, the impacts on wetlands and wildlife could be so much worse. Shallow is simply not a synonym for safe. All companies should be required to meet the same stringent safety standards that were put into place after the Deepwater Horizon disaster.

Mr. Chairman, I hope we can agree that safety should always be our top priority. I am looking forward to working with you and my colleagues to support common-sense safety measures that are clearly needed. And I yield back.

[The prepared statement of Mrs. Capps follows:]

PREPARED STATEMENT OF THE HON. LOIS CAPPS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Thank you, Mr. Chairman, and thank you, Ranking Member Grijalva, for giving me this opportunity to speak.

Representing a district that experienced the brunt of the 1969 Santa Barbara oil spill and still has multiple platforms visible from our shores, I have a very strong and personal interest in offshore drilling safety.

One of the issues that I do not want to lose sight of in this discussion is the importance of safety in both deepwater and shallow water drilling. The Interior Department and industry have understandably focused most of their efforts over the past 5 years on improving deepwater drilling safety, because we saw firsthand just how unprepared we were for something terrible to happen 1 mile under the ocean. As companies continue to move into deeper and deeper waters they will encounter more and more dangerous conditions and greater technical challenges, so continual focus on deepwater drilling safety is absolutely essential.

But the industry still works in shallow waters as well. After Deepwater Horizon we were told by industry that, while new safety standards might be appropriate for deepwater, things were much safer in shallow water operations. While the rest of the country watched oil billowing uncontrollably into the Gulf of Mexico, wondering whether offshore drilling could be done safely at all, shallow water drillers criticized the Interior Department for focusing more on responding to the spill than issuing new drilling permits. For the record, I think the Department of the Interior made the right choice—and the only choice—in that situation, but clearly not everyone agreed.

In November of 2010, barely 7 months after the blowout began, an executive for a shallow water drilling contractor named Hercules Offshore wrote an editorial touting the safety of their operations. In this editorial he wrote, "We've been drilling shallow-water wells safely and without major incident since 1949." The contractor was apparently referring only to waters in the U.S. portion of the Gulf of Mexico, because both the 1969 Santa Barbara blowout and the 1979 Ixtoc [ICKS-tock] blowout occurred in water less than 200 feet deep.

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[Display picture of Hercules rig on fire]

Despite the initial similarities, this picture is not of Deepwater Horizon. This is a picture from July 2013 of a blowout and explosion on a shallow water rig operated by Hercules Offshore, the same company whose executive wrote that editorial about the safety of shallow water operations. The pictured rig was operating in 154 feet of water, using proven technologies, and a blowout preventer right on the rig that could be immediately accessed and constantly inspected.

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onym for safe. All companies should be required to meet the same stringent safety standards that were put in place after the Deepwater Horizon disaster.

Mr. Chairman, I hope we can agree that safety should always be our top priority. I look forward to working with you and my colleagues to support common-sense safety measures that are clearly needed.

I yield back.

The CHAIRMAN. Thank you. Now it is my pleasure to introduce our first witness, Vice Admiral Brian Salerno, who is the Director of the Bureau of Safety and Environmental Enforcement. Happy to have you here.

I will remind you, you have been here before, you know the rule. Your oral testimony is limited to 5 minutes, but your entire written testimony is part of the record. And I think you understand how the lights go there. As soon as it is red, you have to stop in mid-sentence. Thank you.

Admiral SALERNO. Yes, sir.

The CHAIRMAN. The Chair recognizes Mr. Salerno now for your testimony.

STATEMENT OF BRIAN SALERNO, VICE ADMIRAL (USCG, RETIRED), DIRECTOR, BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT, U.S. DEPARTMENT OF THE INTERIOR

Admiral SALERNO. Thank you. Chairman Bishop, Ranking Member Grijalva, and members of the committee, thank you for the opportunity to appear before you today to discuss progress in offshore safety since the Deepwater Horizon incident.

As you know, the blowout explosion and resulting oil spill, which began on April 20, 2010, resulted in the loss of 11 hardworking men on the Deepwater Horizon, and one of the most significant environmental disasters in U.S. history. The aftershocks of that fatal day will forever reverberate with the families left behind, as well as for all those whose lives and livelihoods were affected by the environmental damage caused by that spill.

This event had a profound effect on the public, on the industry, and upon us, as a regulatory body. The Bureau of Safety and Environmental Enforcement was created in direct response to that event, to provide a laser focus on safety, and to reduce the risk of a similar event from ever occurring again. Establishing this new organization allowed for greater mission clarity, and helped remove the sometimes-conflicting priorities within its predecessor organization, the Minerals Management Service. Congress also provided new resources necessary to fulfill the Bureau's regulatory responsibilities.

In the 3½ years since it was established, BSEE has worked diligently to earn public confidence in our oversight activities, while at the same time promoting safe and responsible energy development. We have approached our responsibilities in a number of ways, including strengthening our permitting procedures to ensure more stringent safety analysis of well design; increasing our staff of inspectors, engineers, and scientists to allow for more meaningful oversight; updating our regulations to reflect current operating conditions, industry standards, and workplace safety best practices;

enhancing oil spill response capabilities, especially subsea containment capability; and, most importantly, we placed a strong emphasis on establishing a culture of safety among all those who work on the Outer Continental Shelf.

Regulatory enhancements are important, and they continue to form the foundation of our approach. But, in addition, we continue to engage stakeholders from academia, from industry, from nongovernmental organizations, and other government agencies to improve our approach to system reliability and human decisionmaking.

In 2013, BSEE funded the startup costs for the Ocean Energy Safety Institute, which provides an independent forum for dialog, shared learning, and cooperative research among stakeholders. BSEE is also in the process of establishing an engineering technology assessment center to be located in Houston, Texas, which will be a bureau-wide focal point for emerging technology evaluation.

Looking ahead, BSEE intends to pursue a risk-based approach to our inspection responsibilities to better match our time and resources to the greatest risks. In the near future, we will establish a near-miss reporting system modeled after a similar system used in commercial aviation, and which will help us understand safety trends, and allow us to better focus our prevention efforts. And we will continue to refine our organization to achieve greater transparency, consistency, and effectiveness in our mission performance.

A lot has occurred in the last 5 years to make the Outer Continental Shelf safer. However, incidents still occur. Complacency is our greatest adversary. Our commitment is to remain focused and vigilant, to do everything we can, working with all interested parties, to reduce risk to the lowest practical level, while allowing industry to responsibly develop energy resources.

I would like to thank the committee for inviting me to appear here today, and I look forward to your questions.

[The prepared statement of Admiral Salerno follows:]

PREPARED STATEMENT OF BRIAN SALERNO, DIRECTOR, BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT, U.S. DEPARTMENT OF THE INTERIOR

Chairman Bishop, Ranking Member Grijalva, and members of the committee, thank you for the opportunity to appear here today to discuss the regulatory reforms that the U.S. Department of the Interior (DOI) has implemented since the Deepwater Horizon (DWH) tragedy where 11 offshore workers lost their lives and oil flowed into the Gulf of Mexico (GOM) for 87 consecutive days resulting in millions of barrels of total oil spilled.

Over the last 5 years, the DOI has launched numerous reforms that represent the most aggressive and comprehensive changes to offshore oil and gas regulation and oversight since the enactment of the Outer Continental Shelf Lands Act. One of the most immediate reforms included the division of the Minerals Management Service (MMS) into three independent entities:

1. **Bureau of Ocean Energy Management (BOEM)** ensuring the balanced and responsible development of energy resources on the Outer Continental Shelf (OCS);
2. **Bureau of Safety and Environmental Enforcement (BSEE)** ensuring safe and environmentally responsible exploration and production through vigorous regulatory oversight and enforcement; and
3. **Office of Natural Resources Revenue** ensuring a fair return to the taxpayer from royalty and revenue collection and disbursement activities.

The creation of BSEE out of the former MMS provided for an organization with a distinct mission focus on ensuring safe and environmentally responsible OCS operations through development and promotion of safety standards and processes, along with rigorous compliance and enforcement. BSEE has pursued its oversight mission by implementing a series of comprehensive regulatory reforms; strengthening its internal capacity by improving processes related to inspections, investigations, and enforcement programs; funding research in spill preparedness and response, and technological advancement; and engaging in strategic interagency, international and industry engagements.

ASSESSING AND MANAGING RISK

Managing risk provides the basic framework through which BSEE approaches safety on the OCS. BSEE pursues this objective through a comprehensive program of regulations, technical assessments, inspections, and incident investigations. In addition, we place great emphasis on the establishment of a safety culture throughout industry, the cornerstone of this effort being the Safety and Environmental Management System, or SEMS. SEMS is performance based, and forms a necessary counterpart to our more traditional regulatory oversight activities. We believe this hybrid approach is the most comprehensive way to take safety to the next level.

To further support this overall approach, the Bureau is focusing on building its capacity for analyzing data gained through incident reporting requirements, near-miss reporting, and real-time monitoring. For example, in November 2013, BSEE and the Bureau of Transportation Statistics (BTS) signed an interagency agreement (IAA) to develop the Voluntary Confidential Near-Miss Reporting System (Safe OCS) for use on the OCS. Safe OCS, which will be managed by BTS, has the potential to help identify safety concerns and support collective measures that will help prevent catastrophic incidents that endanger lives and the environment. The trend information will be shared with BSEE, the industry, and the public and provide essential information about accident precursors and potential hazards associated with OCS oil and gas operations.

The Bureau also works with recognized scientific organizations, other international regulators, and the industry to identify and quantify operational risks. These activities, along with increased data collection, will further contribute to BSEE's ability to target the components, operations, and activities that present the highest risk to safety and the environment and ensure that mitigation measures are in place. Through these initiatives and others, the Bureau will continue to ensure that offshore development occurs in a safe and environmentally responsible way.

MAJOR REGULATORY ENHANCEMENTS TO DATE

In the immediate aftermath of the DWH tragedy, it was clear that existing regulations had not kept pace with the advancements in technology used during offshore activities. The regulatory reforms that BSEE has initiated and implemented cover a wide range of subjects, all focused on increasing safety and reducing the risk throughout offshore operations. BSEE continues to use a hybrid approach—prescriptive regulations and performance-based measures—focusing on rules that will provide for the greatest enhancement in safety and environmental protection. As offshore operations expand and move into new environments and require new technologies, BSEE will continue to adapt its regulatory approach and oversight responsibilities. Over the last 5 years, BSEE's regulatory enhancements include:

Promoting Safety Culture and Continuous Improvement at All Levels of Industry—As noted above, the Safety and Environmental Management Systems (SEMS) program is the cornerstone of BSEE's hybrid regulatory approach. The goal is for the SEMS program to encourage the offshore oil and gas industry to look beyond baseline compliance with regulations and move toward a safety culture that promotes continuous improvement in safety and environmental performance. The SEMS program is meant to be a tool through which companies actively manage and improve safety performance related to human behavior, organizational structure, leadership, standards, processes, and procedures—not simply a compilation of required documentation. It also requires industry to maintain an active integrated program that empowers industry workers to participate in safety management decisions. BSEE issued regulations in 2010 and 2012 and will continue to refine the program in future years.

Drilling Safety Rules—Following the DWH tragedy, several immediate actions were taken to address specific offshore safety concerns involving drilling operations. The regulations that were issued in 2010 and 2012 required new standards for well design, casing and cementing, and the third party certification of designs. These rules represented an important first step in addressing regulatory gaps in the off-

shore program. BSEE engineers have since reviewed, analyzed, and approved a total of 579 new well permits for drilling in the GOM that meet these more stringent well-construction standards. Further, despite the new standards recent statistics indicated that new wells are reviewed and approved on average under 60 days.

Access to Subsea Containment Capability—As a condition for approving deepwater drilling operations, BSEE evaluates an operator's capability to contain a subsea blowout. BSEE also evaluates an operator's access to all necessary equipment for subsea containment including a capping stack. As a result, there is now containment equipment available for industry deployment. In addition, BSEE has required the providers of the containment systems to demonstrate successful deployment of the systems in the field.

ONGOING REFORM EFFORTS

Proposed Production Safety Systems Rule—In August 2013, BSEE published a proposed rule to address safety systems that prevent the release of hydrocarbons and protect the personnel on the 2,500 OCS production facilities. This will be the first significant revision of these critical regulations since 1988. The proposed rule will address new technology that has been developed in the past 25 years, upgrade requirements for critical safety equipment, and ensure the use of best available and safest technology. The Bureau is currently working to finalize the proposed rule.

Proposed Arctic Rule—In February 2015, BSEE and BOEM published the proposed rule for drilling operations in the U.S. Arctic OCS. Using a combination of performance-based and prescriptive standards, the proposed regulations codify and further develop current Arctic-specific operational standards that seek to ensure that operators take the necessary steps to thoroughly plan for and conduct safe exploratory drilling operations within the Beaufort Sea and Chukchi Sea Planning Areas.

The proposed regulations have been developed with significant up-front public input from the state of Alaska, North Slope indigenous communities, industry and non-governmental organizations. The proposed regulations are currently open for additional public comment to ensure transparency and solicit feedback from all stakeholders. Interior will continue rigorous stakeholder engagement as well as formal tribal consultation in the region.

Proposed Well Control Rule—BSEE has reviewed over 400 recommendations following the DWH tragedy. On April 13, 2015, BSEE announced proposed Well Control regulations to address some of the key recommendations. This proposed rule includes provisions that increase equipment reliability and build upon enhanced industry standards for blowout preventers (BOP) and, in a comprehensive way, addresses the multiple systems and processes critical to well control operations. The proposed rule requires more stringent design requirements for critical well control safety system equipment and traceability through the lifecycle of the BOP and other well control equipment, ensuring operability of the equipment. Finally, the rule will provide continuous oversight of deepwater operations through onshore real-time monitoring and additional requirements for third party certification of the performance of critical equipment.

Other Reforms—In 2014, BSEE published an Advanced Notice of Proposed Rulemaking related to aviation safety. In the near future, BSEE plans to publish a proposed rule that will incorporate updated industry safety standards for cranes on fixed platforms; the Agency also expects to solicit comments on approaches to improve the existing SEMS regulations.

Increased Limits of Liability—In coordination with BSEE, the Bureau of Ocean Energy Management (BOEM) has taken action to better ensure responsible parties are held accountable for OCS pollution incidents in the future. BOEM has increased the limit of liability for oil-spill related damages from $75 million to approximately $134 million for offshore oil and gas facilities—the maximum allowed under the law—and has established a process for future increases to keep pace with inflation.

BOLSTERING BSEE'S CAPACITY TO REDUCE RISK OFFSHORE

Human Capital

Following the Deepwater Horizon tragedy, it was determined that there were significant skill and staffing gaps in career fields crucial to ensuring safe and environmentally sound exploration and development. The Bureau has taken a number of actions to address long-term hiring and retention challenges including offering a suite of available hiring and retention incentives. BSEE has worked diligently to hire and train new inspectors and engineers, but continues to face significant challenges in recruitment and retention within certain job classifications. BSEE will

continue to implement its Human Capital Strategic Plan, which addresses anticipated workforce changes and gaps in critical skills and competencies.

Inspection Program

BSEE's efforts to reinforce its inspection program have been threefold: increase its inspection and engineering workforce, enrich the training of inspectors and engineers, and apply a risk management methodology to conduct inspections. The number of inspectors in the BSEE Gulf of Mexico Region has increased from 55 in April 2010 to 92 currently. BSEE inspectors now specialize in either well or production operations; this specialization allows for more training and time devoted to a specific area of inspection. The engineer workforce in the Gulf of Mexico Region has increased from 106 at BSEE's inception in October 2011 to 129 currently. This allows for the increased review of permits which requires more analysis to ensure compliance with the enhanced standards.

To ensure that our inspectors and engineers are able to fully assess the latest technological advances, BSEE has implemented a comprehensive training program that ensures they receive the best training currently available. In FY 2014, BSEE offered 79 training courses that resulted in 23,396 contact training hours for 177 BSEE engineers, 113 BSEE inspectors, as well as 20 Coast Guard personnel.

By applying a risk management methodology, BSEE is beginning to shift its inspection program to a risk-based program that more effectively uses the available inspection and enforcement resources. BSEE will in the future target higher risk operations and facilities for supplemental oversight in order to increase the overall performance of offshore operations.

With the increased inspection workforce, BSEE is now positioned to ensure full implementation of the new standards for BOP testing. BSEE inspectors witness BOP testing to observe the skill level of the drilling crews, and to become more involved with the crew's handling of the BOP function. Since October 2010, BSEE inspectors have witnessed 169 on-site BOP tests. Inspectors also conduct detailed reviews of BOP test results; 409 of these detailed reviews have been completed since October 2010. BSEE is considering options that would provide additional oversight using remotely sensed data and real-time monitoring from onshore facilities.

Investigation and Enforcement

BSEE has also taken steps to strengthen its investigation, data analysis, and compliance and enforcement programs. BSEE has reevaluated how it conducts investigations of incidents and potential violations occurring during oil and gas operations on the OCS. Should a safety or environmental incident occur, BSEE has a duty to investigate and determine the causal elements/factors and the appropriate corrective actions. The implications of such determinations will apply to the operator(s) involved in the incident, potentially their contractors and subcontractors, and also may extend to industry-wide practices. These determinations also may have implications for BSEE's own regulatory procedures and standards.

The goal is to improve safety on an operator and company basis, as well as on a system-wide level as appropriate. For the most serious incidents that occur offshore, BSEE conducts in-depth panel investigations, resulting in detailed findings and recommendations. Some panel investigations lead to recommended enforcement actions and/or referrals to other enforcement authorities. BSEE incident investigations can also lead to the issuance of safety alerts, a vehicle to inform industry participants about the circumstances surrounding an incident (or potential incident). For example, in February 2015, BSEE and the U.S. Coast Guard (USCG) issued a Joint Safety Alert addressing a dynamic positioning incident involving an Offshore Supply Vessel which resulted in a loss of position. The alert identified the potential hazard so that other operators could minimize the chance of a reoccurrence.

TECHNOLOGICAL INNOVATION AND ASSESSMENT

BSEE has continued to engage stakeholders from academia, industry, nongovernmental organizations, and other governmental agencies to enhance the knowledge base of BSEE's technical personnel and enabled them to better identify regulatory gaps, promote innovative technologies, and encourage risk-based decisionmaking.

BSEE funded the startup costs for the Ocean Energy Safety Institute (OESI), which provides an independent forum for dialog, shared learning, and cooperative research among stakeholders. Although OESI was established by BSEE, it is not an extension of the Bureau. Rather the OESI is a neutral ground for the exploration of issues of offshore risk that are of common concern to industry and regulators. The BSEE operates as one of many participants, with others coming from industry and academia.

In a separate initiative, BSEE is in the process of establishing the Engineering Technology Assessment Center (ETAC or Center) in Houston, Texas. The ETAC will also strengthen BSEE's ability to assess novel and emerging technologies by keeping pace with an increasingly complex industry. In 2015, projects will focus on the evaluation of BOP technology and the determination of Best Available and Safest Technology. Through the Center, the Bureau will work more closely with original equipment manufacturers and participate more fully with standards-setting bodies. The Center will serve as the primary liaison between BSEE and the OESI, and BSEE anticipates that the ETAC engineers will work with OESI on joint industry projects.

Research

BSEE is leveraging the resources of our interagency partners and working with others to conduct important research related to new and emerging technologies, as well as operations in frontier areas to further our efforts to reduce risks across all offshore operations. The Technology Assessment Program supports research associated with operational safety and pollution prevention and is providing regulatory tools to assist in the evaluation of high temperature/high pressure equipment and materials and cutting edge issues involving BOPs and cementing practices.

BSEE is the principal Federal agency funding offshore oil spill response research that focuses on improving the methods and technologies used for oil spill detection from aerial and subsea platforms and vehicles, surface and subsea containment, treatment, recovery and cleanup. The Bureau operates the National Oil Spill Response Research and Renewable Energy Test Facility, known as Ohmsett, where many of today's commercially available oil spill cleanup products have been tested. Government agencies including the USCG and the U.S. Navy as well as private industry and oil spill response organizations from around the world train their emergency response personnel with real oil and their own equipment.

Preparedness

BSEE continues to focus on improving the Nation's response capabilities through rigorous oversight and research opportunities. BSEE reviews oil spill response plans to verify that owners and operators of offshore facilities are prepared to respond to a worst case oil discharge. BSEE requires that plans be updated at a minimum of every 2 years or when key changes to an operator's preparedness posture or worst-case discharge scenario change.

In 2014, BSEE conducted 11 unannounced complex table top and/or equipment deployment exercises. These exercises tested operator's oil spill response plans and their ability to respond effectively and efficiently to hypothetical spill scenarios.

Interagency Coordination

BSEE's responsibilities for the regulation of offshore energy development on the OCS are shared in some cases with other Federal agencies. The Bureau leverages its limited resources through agreements with Federal partners and other agencies through memoranda of understanding or agreement (MOU, MOA) and IAA. For example, BSEE and the USCG have closely aligned jurisdictional and regulatory responsibilities for offshore inspections, incident response and investigations. Under an overarching MOU and six MOA's the two organizations have collaborated extensively to reduce redundancy and ensure consistency and clarity for the regulated community. BSEE has also entered into agreements with other Federal partners including the U.S. Department of Energy (DOE), U.S. Department of Transportation, Pipelines and Hazardous Materials Safety Administration, the U.S. Environmental Protection Agency, and U.S. Army Corp of Engineers.

BSEE signed an interagency agreement with the DOE in 2014. Through the formal Memorandum of Collaboration, BSEE works with Argonne National Laboratory and the National Energy Technology Laboratory on areas of spill prevention research, risk modeling, renewable energy initiatives, and technology research.

BSEE also participates in the Interagency Coordinating Committee on Oil Pollution Research (ICCOPR), which provides a forum for research collaboration that looks at oil spill prevention, preparedness, and response. The ICCOPR, a congressionally mandated body which is comprised of staff from Federal agencies, provides a venue in which agencies share their latest research, regulations, and policies; explore opportunities for collaboration on research; and, identify emerging issues that need national attention. BSEE currently serves as the Co-Chair providing leadership and coordinated research efforts throughout the Federal oil spill research community. BSEE also sits on the Scientific and Technical Committee of the National Response Team.

International Collaboration

BSEE's commitment to reducing risk throughout the offshore industry is not limited to the U.S. OCS. Through various multilateral and bilateral relationships, BSEE is helping to share U.S. standards and best practices for safety and environmental protection internationally across a global industry. Bureau experts are routinely requested to provide technical assistance and training to other nations who are working to develop their offshore energy resources in a safe and environmentally responsible manner. BSEE engagements include policy assistance, bilateral and multilateral engagements, standards development, international agreements, and participation in international fora. Notable multilateral engagements include BSEE participation in the International Regulators Forum (IRF), International Offshore Petroleum Environment Regulators, Arctic Offshore Regulators Forum, and the Caribbean Oil Spill Cooperation Forum.

BSEE is actively involved in several working groups of the Arctic Council. For example, as a member of the Emergency Prevention, Preparedness, and Response Working Group, BSEE is engaging international partners in joint research activities to better protect resources that could be impacted from spills in Arctic waters.

Through the implementation of the U.S.-Mexico Transboundary Hydrocarbon Agreement, BSEE continues to work with Mexican officials to exchange information and craft procedures for a joint inspections program that supports the safe and responsible exploration and development of hydrocarbon resources along the maritime boundary.

CONCLUSION

The efforts outlined throughout this testimony represent important milestones in BSEE's ability to achieve its mission to ensure offshore safety, and to protect life, property, and the environment while serving as a significant source of energy for the Nation. In calendar year 2014, OCS leases in California, Alaska, and the GOM provided 528 million barrels of oil and 1.3 trillion cubic feet of natural gas, accounting for more than 16 percent of the Nation's oil production and about 5 percent of domestic natural gas production. BSEE will continue to support domestic energy production from the Nation's offshore resources, while actively working to reduce risk in order to ensure safe and environmentally responsible operations on the OCS.

It is my belief that our work as regulators—on behalf of the American people—is never finished. As our commitment and duty to the American people, we will remain vigilant in instituting reform efforts and lessons learned since the tragic DWH event. We will continue to work cooperatively with the regulated community to promote best practices and to support a robust culture of safety within industry. I thank the committee for inviting me to appear today. I would be pleased to answer any questions.

QUESTIONS SUBMITTED FOR THE RECORD BY CHAIRMAN ROB BISHOP TO DIRECTOR SALERNO, BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT

Question 1. In the hearing, you responded that the lessons learned in the Gulf of Mexico will be employed in new areas, such as the Atlantic, and that exploration and production can be conducted safely. Can you explain where BSEE intends to have a regional office to better regulate this prospective development and how the Bureau intends to oversee operations?

Answer. No decision has been made at this time regarding the location of a regional office to oversee exploration and production activities on the Atlantic Outer Continental Shelf (OCS). If regulatory or technical issues arise before the office is established, staff from our Headquarters and Gulf of Mexico offices will assist.

Question 2. Can you please elaborate on the criteria used to furnish the economic analysis of your rulemakings.

Answer. The criteria used to furnish economic analyses of BSEE's rulemakings are established by statute, Executive Orders and guidance from the Office of Management and Budget (OMB) for all Federal regulatory agencies. Most of these criteria are found in Executive Order (E.O.) 12866 and E.O. 13563, and associated guidance in OMB Circular A-4,"Regulatory Analysis" (Sept. 2003). In addition, agencies are required by the Regulatory Flexibility Act of 1980 to consider the economic impact of regulations on small entities, and agencies are required under the Unfunded Mandates Reform Act of 1995 (UMRA) (Public Law 104–4) to assess whether the effects of the regulation would include a mandate involving additional annual government expenditures of $100 million or more.

BSEE looks at all available sources of data and uses a variety of data sources for its economic analyses. These include BSEE's own electronic databases, especially TIMS, which include information collected from industry reports and/or compiled by BSEE inspectors and other staff in the course of their duties. Other data are acquired from publicly available statistics from several agencies, such as energy prices and volumes from the Department of Energy, industry statistics from the Department of Commerce, and wage rates and the Consumer Price Index from the Bureau of Labor Statistics. Additional data are acquired from trade association and professional association (e.g., Society of Professional Engineers) Web sites, and, where appropriate, from inquiries to knowledgeable and reliable sources within the affected industry, including BSEE's own subject matter experts with direct knowledge of relevant facts.

Data provided through public comment on proposed rulemakings also are invaluable sources of information that allow the agency to refine its economic impact analysis.

Question 3. Given the complexity of the well-control rule and how it will work in concert with the proposed Arctic rule, can you provide a schedule for expected implementation?

Answer. Both the Arctic rule and the well control rule are proposed rules published for public comment. All relevant comments will be reviewed and considered by the Department before any final rulemaking decisions are made. During the comment review and preparation of the final rules, the Bureaus will reconcile any potential overlap in the rules and will consider the appropriate implementation schedules for both rulemakings.

Question 4. How is BSEE working with industry to encourage further safety innovations for future operations?

Answer. For decades, BSEE and its predecessor bureaus have communicated with industry to encourage safety innovations through Regional and Headquarters administered programs and functions. These interactions occur through any number of fora including formal review processes, sharing the results of significant permit reviews and incident investigations, participation in conferences and technical fora and through technical research projects focused on operational safety and pollution prevention.

For example, BSEE uses the results of incident investigations and data analysis to identify incident causes and trends. Appropriate actions are then identified to prevent the recurrence of these incidents and to enhance safety and environmental protection on the OCS. These actions may include publishing Safety Alerts, initiating technical research, developing new/revised regulations or standards, enhancing inspection strategies, and holding safety workshops. BSEE uses these tools and practices to inform the offshore oil and gas industry and our international counterparts of the circumstances surrounding an incident or a near miss, and to provide recommendations to help prevent the recurrence of such an incident on the OCS.

BSEE and industry also engage with each other in technical forums, meetings on specific topics or practices, regulations workshops, and the development of technical standards. At the present time, BSEE incorporates over 100 technical standards into its regulatory program. The standards include equipment specifications, operating practices, equipment manufacturing, and hydrocarbon measurement. Currently, BSEE is working with industry on a variety of standards-related issues to improve safety on the OCS. These standards include deepwater operations, Safety and Environmental Management Systems, cementing, cranes and lift operations, operations in high pressure high temperature environments and safety valves.

While BSEE continues to promote new technologies and safety innovations through these means, more recently BSEE has broadened its exposure and influence through new and evolving programs, such as:

The Best Available and Safest Technologies (BAST) program. As part of the initiative, BSEE engineers continuously identify and assess new and emerging technologies that have been recommended for or have the potential for use in the OCS. BSEE engineers engage designers, Original Equipment Manufacturers, service providers, distributors and others to assess the capabilities of technology as potential BAST and, where possible, witness qualification testing to assess performance and risks.

Safety and Environmental Management System (SEMS). As part of our implementation of the SEMS program, BSEE has formulated over 20 questions on how SEMS can be used to encourage further safety innovations in OCS oil and gas operations, and has asked the Ocean Energy Safety Institute (OESI), a research consortium

sponsored by BSEE and run by Texas A&M, University of Texas and University of Houston, to conduct workshops and forums with industry and other stakeholders, to provide BSEE with answers to those questions.

Ocean Energy Safety Institute (OESI). In 2013, BSEE established the OESI, a consortium of the University of Texas, University of Houston and Texas A&M. It is housed in the Texas A&M Mary Kay O'Connor Process Safety Center. The OESI was established to facilitate research and development, training of Federal workers on BAST, and implementation of operational improvements in the areas of offshore drilling safety and environmental protection, blowout containment and oil spill response.

The OESI provides a forum for dialog, shared learning, and cooperative research among academia, government, industry, and other non-governmental organizations, in offshore energy-related technologies and activities that ensure safe and environmentally responsible offshore operations.

The CHAIRMAN. Thank you, I appreciate that. Stayed in the time limit too, I appreciate that.

We will now turn to questions. Let me turn first to Mr. Lamborn, if you have questions for the Director.

Mr. LAMBORN. Yes, thank you, Mr. Chairman. Thank you for holding this hearing. And, Director Salerno, thank you for being here today.

This week Secretary Jewell said that offshore drilling is safe, especially under the Federal reforms that have been put into place since Macondo. Do you agree with her statement?

Admiral SALERNO. I believe it has gotten safer, sir, yes.

Mr. LAMBORN. No, I am glad to hear that. But is it safe?

Admiral SALERNO. It is comparatively safer, yes. And I think the reforms that have been put in place have contributed to that, as well as a number of other factors.

Mr. LAMBORN. Now, I imagine that the reforms will carry forward into all of the new areas that this committee hopes to see developed in the coming years, such as the Arctic and the Atlantic. Is it your belief that offshore exploration and development can be done safely in the Arctic and the Atlantic?

Admiral SALERNO. With the proper oversight and controls, I believe it can be done safely.

Mr. LAMBORN. Thank you. I would like to touch on two of your most recently proposed regulations, the Arctic Rule and the Well Containment Rule. The Well Containment Rule focuses on the high pressure and high temperature environment of the deepwater Gulf of Mexico. And, from what I know, the areas put forward for Arctic development are in a low pressure, low temperature, and shallow water environment. How would these rules work together, or work in tandem with two very different environments?

Admiral SALERNO. The Well Control Rule does include high temperature, high pressure, as you indicated. But it is actually more inclusive than that. It also addresses activities in shallower water, and it also is meant to apply to Arctic activities, as well.

Mr. LAMBORN. And does the Arctic Rule include provisions for a second ship to be available to start drilling a relief well, in case there is a problem?

Admiral SALERNO. The Arctic Rule does propose a second rig, which would be available to drill a relief well, should one be required. That rig can also be used for drilling activity.

Mr. LAMBORN. How long would it take to start and finish drilling a relief well, if such a thing were necessary?

Admiral SALERNO. We estimate—well, we built into the proposal a 45-day window at the end of the drilling season to allow sufficient time for a relief well to be drilled. And that would include time to reposition a second rig to the site.

Mr. LAMBORN. So you don't think there are better ways, faster ways, of tackling the issue than what would take up to 45 days with a second drilling rig doing a relief well?

Admiral SALERNO. To permanently kill an out-of-control well, our best understanding is it will take a relief well. Most wells are permanently killed in that fashion. So that is why we included it in the proposal.

Now, we have asked the industry in this proposal for alternative technologies, and we would welcome input from the industry along those lines.

Mr. LAMBORN. OK, thank you. Also, my understanding is that the comment period is going to be limited to 60 days, which, to me, sounds like a very short time. What are your thoughts on that?

Admiral SALERNO. The Arctic Rule has just been extended an additional 30 days, for a total of 90 days. And our initial comment period for the Well Control Rule is 60 days. Should there be a need to extend that, obviously, the Department can evaluate that and extend it, if necessary.

Mr. LAMBORN. Well, I would ask you to consider that, because these are very technical, as you know. And that additional time could be useful to the people wanting to make comments.

OK, thank you. I appreciate that. Mr. Chairman, I yield back.

The CHAIRMAN. I thank the Subcommittee Chairman for those questions.

Turning to Mr. Grijalva, I realize you already have the monitor aimed toward you. You are taking over here. Do you have questions?

Mr. GRIJALVA. I would defer to the——

The CHAIRMAN. Ms. Tsongas, defer to you for the questions.

Ms. TSONGAS. Thank you. And thank you, Vice Admiral Salerno, for being here. It is great to have you here.

You know, I come from the coastal state of Massachusetts. And, like many of the Gulf states which were so deeply impacted by the BP oil spill, the health of our ocean, the Atlantic, directly impacts the health of many communities in Massachusetts, as well as the other New England coastal states. And we depend on the ocean and coastal areas for shipping, for commercial fishing and tourism, as well as for alternative energy development.

In fact, Massachusetts is home to the most profitable port in the Nation, New Bedford, Massachusetts, which brings in over $400 million a year in commercial fishery landings. The New England region, as a whole, brings in over $1.1 billion in commercial landings annually, which, obviously, has a ripple effect on our entire regional community.

As you know, the Department of the Interior recently issued the draft 5-year Outer Continental Shelf Oil and Gas Leasing Program, which included a proposed lease sale in the Atlantic Ocean. The BP oil spill underscores the real risks associated with offshore drilling.

And, despite testimony today, I remain concerned that safety reforms are insufficient. I strongly oppose this proposed lease sale, and hope it will be removed from the final plan.

In your written testimony about agency reforms, you said that BSEE approaches safety on the Outer Continental Shelf by assessing and managing risk. You also said that the Bureau works with scientific organizations and industry to identify and quantify operational risks. We have not had drilling off the coast of the Atlantic in decades, and the most recent wells were abandoned because they were not commercially viable.

So, my question is, as you are relooking at the way in which you do work, given the risks that we know are real, has BSEE ever conducted any assessments of drilling safety off the coast of the Atlantic?

Admiral SALERNO. We have not looked specifically at the Atlantic. We look at drilling activity in and of itself, you know, the nature of drilling, the technology that is used in drilling, the environment where drilling takes place—particularly, for example, in the Arctic, where we need special conditions. But we focus on the technology, the techniques, the practices that are used by the industry, and everything that goes into preventing mishaps and accidents on the Outer Continental Shelf. But it is not necessarily geographically specific for the Atlantic.

Ms. TSONGAS. So are you basically depending upon industry assessment?

Admiral SALERNO. No, we are not. We are focusing on our own assessments of industry practices and the technology that is being used in place.

We really focus on the design of the well, making sure that there is proper integrity there, there are proper barriers in place, so that anything that conceivably could happen has a safety barrier, multiple safety barriers. That is how we approach the management of risk.

Ms. TSONGAS. Well, should the Atlantic lease sales be included in the final 5-year plan, what do you expect to be the biggest safety concerns?

Admiral SALERNO. We will certainly take a close look at any unique characteristics, but a lot of it will be depending on the geology, what we anticipate in the geological formations, what risks they impose, the temperatures, the pressures, and certainly any operating conditions regarding meta-ocean data. You know, anything that might affect activity on the surface.

Ms. TSONGAS. And do you imagine that the precautions in the Atlantic would be different from those that are in the Gulf or wherever else you may be considering lease sales?

Admiral SALERNO. Potentially. I think it will be a result of all of the factors I just mentioned.

Ms. TSONGAS. Well, as I said, I remain very opposed to having the Atlantic included in these proposed lease sales, and I do hope that it will be taken off the list. Thank you, and I yield back.

The CHAIRMAN. Thank you. Now I will turn to Mr. Graves, this is your back yard. Do you have questions for the Director?

Mr. GRAVES. Thank you, Mr. Chairman. Put the slide up, please.

[Slide]

Mr. GRAVES. Director, this slide here shows—the blue bars there show the volume of oil that was spilled in various years, dating back to 1973. And the red shows the number of incidences.

You know, my takeaway, looking at that, is that you see a trend of, number one, decreasing incidences, which I think is fantastic. When I refer to incidences, I am talking about spills. Number two, you see a volume, significant volume drop. You see a bump in Valdez. You see a bump in 2005, as a result of the extraordinary hurricane activity that we had. But the trends are exactly what I think all of us want to see: fewer incidences and extraordinary reduction in the volume of oil that was spilled.

If you were to take the oil that was spilled in Deepwater Horizon, you could take that max year that looks like it is 1975, and by some estimates you could multiply that times 10 or 20. OK? And that takeaway is over 2,000 separate spills. So I will say again, you can take the spills, over 2,000 separate spills, total volume, you can multiple it times 10 or 20.

I realize that the District Court said it is 3.19 barrels that were spilled. That is under appeal by Department of Justice. And I think there is other documentation out there which may indicate that the spill volume was much higher.

I guess you would concur that this is a good direction and good trends that we are seeing.

Admiral SALERNO. Yes.

Mr. GRAVES. You understand that, in the case of Deepwater Horizon, that the judge determined that there was gross negligence and that there was willful misconduct. And I would consider that to be somewhat of an anomaly, meaning that the operations in that particular situation were an anomaly. In fact, the judge says that there was an "extreme deviation from the standard of care, and a conscious disregard of known risk." He also said that the operators decisions were "profit-driven."

I am all for ensuring that we are safe in operation of offshore. But I also think it is really important for us to recognize this: gross negligence, willful misconduct. The fact that we have had billions of barrels of oil that have been produced in the Gulf of Mexico, and trillions of cubic feet of natural gas, and we haven't had incidences. We haven't had serious spills. And this is an anomaly. And I think it is very important that that be taken into consideration.

Whenever you go ride a motorcycle, you put a helmet on. Whenever you go whitewater rafting, you put on a PFD or a life jacket, because there are additional safety risks. I will say that, with the corners that were cut in Deepwater Horizon, absolutely the capture measure, the capping the recovery measures, were insufficient, based upon the risks that those operators, that those RPs, were taking. But I am concerned that what is happening now in some cases—that the safety regs are going to go beyond, and you are going to punish some of those that have actually been good operators in the Gulf of Mexico. And I just want to place that in the record, and I want to ask you to please consider that we have had safe, good operators in the Gulf.

Ask you a question. Right now—and you can certainly come up with various estimates; I think it is difficult to get an accurate prediction—but you can easily conclude that today—that there are

multiple times more oil in the Gulf of Mexico than there was spilled during the entire Valdez spill. Do you believe that the cleanup efforts have been sufficient? I know it is outside your box.

Admiral SALERNO. Yes, that is outside my box. They are continuing. I think the cleanup efforts were a remarkable job, they did a remarkable job. But it is ongoing. It is not done. There is still oil out there, and the unified command continues to exist, to the best of my knowledge, for that purpose.

Mr. GRAVES. Director, the fact that, here we are, 5 years later, and we are still seeing the same headlines as we saw 5 years ago, extraordinary volumes of oil that are still being recovered—I can take you out there today, I can take you out there any day you want to go, and I can show you oil. I will tell you I think it is ridiculous. I think it is absolutely ridiculous that we still have the volumes of oil that are out there today, and that the Coast Guard and the Feds are not being more vigilant in requiring the RPs to be more aggressive in the recovery efforts. And I think that much, much more can be done.

To see the President hide behind environmental concerns and oil spill concerns on Keystone Pipeline, yet in this case allow the extraordinary volumes of oil to infect one of the most sensitive and productive ecosystems on this continent I think is absolutely unacceptable.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you. Mr. Huffman.

Mr. HUFFMAN. Thank you, Mr. Chairman. I have come to associate these oversight hearings with the very colorful and sometimes lurid titles about government overreach and water grabs, and things like that. So I was kind of surprised to see this very technical, academic title today: "Innovations in Safety Since the 2010 Macondo Incident." I didn't even know what the Macondo Incident was.

Turns out the Majority's messaging department has once again been very on-message. The message with this milestone anniversary of the tragic Deepwater Horizon spill is to not talk about that spill. In fact, we are even renaming it. We are calling it the Macondo Incident. And we are going to talk euphemistically and wishfully about all the advances in innovation that have made deepwater drilling and other exploration safe now.

It is a great attempt at messaging. But, unfortunately, it is not very accurate. There is a lot that we could be saying on this milestone about what happened with the Deepwater Horizon rig. We could be talking about the inherent dangers of oil drilling and exploration, the loss of life that continues to happen, the exploding trains that we are experiencing all too often around the country, the inherent environmental damage and risk that we see with our unhealthy reliance on oil. We could talk about the full extent of the environmental damage from the Deepwater Horizon spill.

We could talk about the Barrier Islands in Louisiana that have eroded and begun to disappear because of the loss of vegetation, as the mangroves were encased in oil. I was watching a show last night where somebody took a boat up to one of these islands, and just the propeller action from that boat started stirring up oil that was beneath the surface.

We could talk about the massive oil mats that are being found beneath the surface that nobody talks about. They are not visible from the surface. But I was glad Mr. Graves raised this issue, because if we are going to commemorate this important milestone, we need to be honest about it. We can't whitewash the full consequences of our unhealthy reliance on big oil, and the inherent dangers of some of these drilling operations.

Now, I know that the Majority would like to have that be the narrative today, how far we have come, how safe drilling and exploration is, because, obviously, there is an agenda to take drilling and exploration into the Arctic, onto the Atlantic Coast. But we need to think very carefully about that, and make sure that we are drawing the right lessons from our own very recent history.

So, Director Salerno, I just want to ask you about the Arctic, for example. Would you agree that the Arctic is probably one of the more hostile climates that we could attempt to do oil exploration and drilling in?

Admiral SALERNO. It is a hostile environment. It is not impossible, but it would require very special considerations and capabilities to be brought to the scene.

Mr. HUFFMAN. Choked with pack ice 8 months of the year, 25-foot seas, gale force winds, a lack of nearby equipment and staging locations. All of these things are going to seriously complicate an attempt to do drilling in a place like the Arctic, wouldn't you agree?

Admiral SALERNO. I liken it to a moon shot. You really have to bring what you need with you, which gets to the whole question about the relief rig. And it also gets to the special capabilities of the equipment that is brought to the scene.

Mr. HUFFMAN. Now, Shell Oil Company tried to get into that area in August of 2012. And it is my understanding it didn't go so well. Are you familiar with that effort?

Admiral SALERNO. I am.

Mr. HUFFMAN. Would you tell us a little bit about what went wrong?

Admiral SALERNO. There were elements of the overall operation which did not pan out as Shell had planned. The environmental response capabilities were not brought to bear. That resulted in a restriction in what drill was allowed to do in their drilling activity. They were not allowed to enter into an oil-bearing zone, as a result.

And then, as was well publicized, the marine transportation portion of their operation failed bringing the rig out of the Arctic. This actually occurred down by the Aleutian Chain, where they lost a tow line, and were unable to recover the tow.

Mr. HUFFMAN. They had an underwater containment vessel that they claimed could bottle up a gusher. What happened to that?

Admiral SALERNO. That was not functional. And that was the reason they were not allowed to drill into an oil-bearing zone. They did not have that capability readily available.

Mr. HUFFMAN. And they had two drilling rigs that they lost control of. One of them crashed on the rocks and had to be rescued by the Coast Guard. Is that your understanding, as well?

Admiral SALERNO. I believe they did drag anchor, they did have some marine problems, and the Coast Guard addressed those.

Mr. HUFFMAN. All right, thank you. I think we need to be very careful before wishfully assuming that everything is safe with oil exploration. Thank you, Mr. Chair.

The CHAIRMAN. Thank you. The Arctic is hostile, but they are not in a drought.

Mr. Gohmert, let me turn to you. And I want you to know that I am trying to follow your lead, but I only have a can, I don't have a bottle, I am sorry.

Mr. GOHMERT. You can get your can out, but that is——

The CHAIRMAN. You are up.

Mr. GOHMERT. Thanks. Director, thanks for being here. Do you know, I don't have it in front of me, but do you know how many egregious safety violations British Petroleum was cited with before the blowout of the Deepwater Horizon?

Admiral SALERNO. I do not have that at my fingertips, sir. I can get it for you——

Mr. GOHMERT. Yes——

Admiral SALERNO [continuing]. For the record.

Mr. GOHMERT. Well, it seemed like it was right at 800 egregious safety violations. That sound about right, in that area?

Admiral SALERNO. Again, sir, I would have to check the data on that.

Mr. GOHMERT. Do you know of any offshore production company that has come anywhere near 800 egregious safety violations?

Admiral SALERNO. Not offhand.

Mr. GOHMERT. Because we have had hearings on it before, and it seemed like some may have had one, some two, and British Petroleum had, as I recall, nearly 800. And some of us were just scratching our heads. How in the world were these people allowed to keep operating with those kind of egregious problems?

And, having graduated from Texas A&M, that is known for its petroleum engineering and other petroleum degrees, I have had friends, many that have worked out in the Gulf of Mexico, and they have told me about BP back before the blowout, the Deepwater Horizon, that they had a reputation for trying to cut corners. So, many of us just wondered how in the world the Obama administration allowed them to keep operating.

And I read an article that, on the day of the blowout, BP officials were meeting with Senator Kerry at that time about a big coming-out party announcement, where BP was going to announce their big support for the cap and trade bill. So I didn't know if maybe their favorable position on cap and trade got them some special consideration, at least the Administration looking the other way.

Since you were not familiar with how many egregious safety violations there had been, and you are in charge of the Bureau of Safety and Environmental Enforcement, do you not pay attention to who the egregious safety violators are?

Admiral SALERNO. Oh, I absolutely do.

Mr. GOHMERT. But you just don't know——

Admiral SALERNO. I don't have that number at my fingertips, no.

Mr. GOHMERT. Do you have any idea how many egregious safety violations British Petroleum has had since the Deepwater Horizon blowout?

Admiral SALERNO. Not at my fingertips.

Mr. GOHMERT. So, we really don't have to worry about them. We know, surely, they would never let something like that happen again. Is that the approach that your bureau takes?

Admiral SALERNO. Not at all. Not at all, sir. They, you realize, were debarred for several years. They were not allowed to——

Mr. GOHMERT. So who is the most egregious safety violator that we have in the Gulf of Mexico right now?

Admiral SALERNO. There are a number of companies that we have on what we call performance improvement plans because of unsatisfactory performance——

Mr. GOHMERT. Which ones are those?

Admiral SALERNO. I can get you a list of those, sir.

Mr. GOHMERT. But you don't know, just off the top of your head.

Admiral SALERNO. I do have——

Mr. GOHMERT. Is that somebody else's responsibility?

Admiral SALERNO. I was trying not to use up your time, sir, but——

Mr. GOHMERT. Well, that is all right. I am really curious.

Admiral SALERNO. We have had—I am sorry here——

Mr. GOHMERT. So have you personally had dealings with any of the egregious safety violators in the Gulf of Mexico?

Admiral SALERNO. Yes, well BP, in particular. They are under court-ordered safety——

Mr. GOHMERT. So they continued to have egregious safety violations since——

Admiral SALERNO. We had regular meetings with them, and they are subject to a heightened degree of scrutiny.

Mr. GOHMERT. So they have continued to have egregious safety violations, or this is still from Deepwater Horizon?

Admiral SALERNO. No, we did not see egregious safety violations.

Mr. GOHMERT. OK. But they are just on watch from that original one.

But what about other egregious violators? Do you have direct dealings with any of those, or do you just leave that to somebody else, to deal with egregious safety violators?

Admiral SALERNO. No, I do meet with them.

OK, the ones on special—that we watch very closely are ERT Talos, BT, Pogo. Those are three.

Mr. GOHMERT. OK.

Admiral SALERNO. We have——

Mr. GOHMERT. Nothing like good staff to hand us notes to help us out. So that is very helpful.

But I was curious about you, personally, whether you were a hands-on kind of person that really wanted to stop egregious violations.

I see my time has expired. But I would encourage you to take a personal interest in who the egregious violators——

Admiral SALERNO. I assure you, I do.

Mr. GOHMERT. OK. Well, I will look forward to having better answers next time, since you do. Thank you.

The CHAIRMAN. Mrs. Capps.

Mrs. CAPPS. Thank you, Mr. Chairman. And thank you, Director Salerno, for your testimony, and also for the impressive amount of

work you have done on new drilling and safety regulations following the Deepwater Horizon incident.

But it also highlighted serious weaknesses in our ability to actually remove oil that has been spilled into the water. That is the topic I would like to focus on a bit.

I witnessed myself the 1969 Santa Barbara oil spill, and I vividly remember the booms that were used to contain the oil, and the workers who mopped—literally mopped—up the oil with their bare hands, and got it all over themselves, as well as the wildlife. Watching the Deepwater Horizon response unfold, I was struck by how little the spill response technology itself being used in 2010 had advanced since the Santa Barbara spill 40 years earlier.

Director, have these technologies improved at all in the past 5 years? And is BSEE—now that this structure is in place, are you planning on making any updates to your oil spill response regulations, which I believe were last updated in 1997?

Admiral SALERNO. Yes, thank you. You are correct. Between, say, the Exxon Valdez and Deepwater Horizon, there was not very meaningful improvement in oil spill response technology. In the last 5 years there has been—I would call it marginal increase in mechanical spill recovery techniques. There have been some new skimmers that have been designed, and we have participated in that, predominantly through our test facility in New Jersey, which is the largest test tank in the country. And they have developed skimmers that are several times more efficient than previous models.

There have been improvements in boom technology, as well, so that booms can be towed by vessels at greater speed, which helps collect and corral oil. So there are improvements there. And I think, as you know, for deepwater there are the spill containment capabilities.

Mrs. CAPPS. Thank you.

Admiral SALERNO. I think you will hear more about that on the second panel.

Mrs. CAPPS. Right.

Admiral SALERNO. R&D is ongoing. Our Bureau invests, I think, more Federal dollars than any other Federal agency in R&D and spill response technology to, in a coordinated way with other Federal agencies, to enhance preparedness.

Mrs. CAPPS. Right. That is encouraging to hear.

You know, we have seen over the past decades that most action on drilling safety—and I think this is human nature—or spill response has been taken reactively, both in agencies and here, in Congress. When you have an accident, when there is a spill, the issue comes to the forefront, people respond, and then, in a few years, complacency tends to return, and no new advances are made until the next disaster.

As you note in your testimony, the production safety system rules were last updated in 1988, and that is more than 25 years ago.

Another question: Beyond trying to predict risks in future technologies, how is the Agency working to be more proactive? You mentioned a test area. Maybe you would like to highlight a little

bit more of that. To keep regulations in line with technology before something goes wrong.

Admiral SALERNO. Well, we are doing the R&D work involving industry and academic sources. We use our test facility. We are in the process of updating our regulations for spill response. I would anticipate some time next year a proposal would go out along those lines.

A lot of activity, a lot of R&D activity, focusing on the Arctic for obvious reasons.

Mrs. CAPPS. Good.

Admiral SALERNO. On how oil could be recovered from underneath ice, how in-situ burning or dispersants might be used in ice-choked areas, as well as the ability to spot and detect oil in low-light situations.

Mrs. CAPPS. And in BSEE's production system rule, the Agency proposed to strengthen the requirements for companies to use the best available and safest technology. And that is a proposal I understand the industry—I suppose, again, human nature—tends to push back on.

I asked you about this proposal a few weeks ago, and you said you hoped the rules would be completed. And this would be the rules for industry itself to push technology forward, in terms of potential problems as they drill. You hoped the rules would be completed some time this spring. Could you give us an update? Where do things stand with this effort? Are things still on track this spring?

Admiral SALERNO. Yes, ma'am. The production safety rule is taking a little bit longer than we would like. We still hope to get that out, probably this summer.

The vast provision of that rule, the requirement will still be in the rule, but the definition of how it will work is something that we have been working on separately. We have been engaging with academia and with industry, a number of industry groups, on——

The CHAIRMAN. I am sorry to cut you off, but—I am not sorry, you are over time.

Turn to Mr. Wittman.

Dr. WITTMAN. Thank you, Mr. Chairman. And, Director Salerno, thank you so much for joining us.

As you know, in Virginia, the vast majority of our congressional delegation and state officials are in favor of offshore energy development. I see that in the proposed 2017–2022 draft 5-year plan that Virginia Lease 220 is in consideration. I hope that that continues in consideration, more than just the exploration, but into the development phase. I can tell you that we feel very strongly that energy production in Lease 220 can take place safely, especially at 50 miles offshore. We believe in those areas it can take place very, very safely.

Let me ask this. I know an earlier question was similar, but I want to ask specifically to the lessons learned from the Deepwater Horizon disaster, understanding not only where technology was not applied properly, but also where there was a breakdown in decisionmaking, both for the drilling company, both in BP, and within the regulatory community. There was a whole slate of things. If

you look at that historically, you can see it at different points. There were problems that led to that particular disaster.

Having learned what happened in studying the Deepwater Horizon disaster, understanding where those problems exist and, as you spoke of, and Secretary Jewell spoke of, the lessons learned, and how those lessons learned today are being applied to safety standards for the industry in both drilling and in the development of that energy, do you believe, with those lessons learned, that in Lease 220, that drilling can take place safely, and that we can apply those lessons learned in those areas, particularly within that lease area?

Admiral SALERNO. I do. Thanks. You raised a very important point. One of the most critical elements going forward is the culture of safety, how people make decisions. It is not solely relying on the technology and the data that they receive, but what they do with it, and whether they stop work if unsafe conditions present themselves. That has been a noticeable change in the last several years.

Many of the companies that I do interact with—and I meet with all the major companies, and a lot of the smaller companies—this is what we talk about, how they make decisions. So that is where we will take safety to the next level. It was the focal point of our safety and environmental management system. We had two rules that have come out since Deepwater Horizon to really get at that human element and human decisionmaking.

Dr. WITTMAN. I think that is a great point: the human element is important. The technology is also important, to make sure that we properly apply technology.

There have been some comments made by Members of Congress to say that technology does not exist today for oil drilling offshore in the Outer Continental Shelf to be done safely. Is that a correct statement? Does the technology not exist for that to be done safely?

Admiral SALERNO. There are some areas where technology is really at the cutting edge: the high temperature, high pressure well. They can drill the well, but to actually create the producing systems, that technology is still being developed. And there are joint industry projects underway to do that. We are working very closely with those companies, because they are really out ahead of our regulations, they are ahead of industry standards. So this requires very, very close contact with the industry, to make sure that all of the safety barriers are in place, and the technology is well understood.

Dr. WITTMAN. Got you. So, not only is it a situation where the technology does exist—in fact, the industry is pushing the envelopes of technology, and you all are trying to keep up to make sure that it is applied properly—but can that technology, even on the cutting edge, can not only be applied properly, but can decisionmaking now take place within that realm of new technology, to make sure that we do mitigate the risks? This is not a zero-risk operation. It never will be. But there is nothing on the face of this earth that really is zero risk.

Give us a perspective about the risk of today's technology, where it is going, and how you all have integrated better decisionmaking,

both at your agency level, but also with the folks that you permit to do the drilling, and to apply that technology.

Admiral SALERNO. Well, since Deepwater Horizon, we have established a technical assessment team in our Gulf of Mexico, which does exactly that. And it is also the reason why we are putting a technology assessment center with a bureau-wide focus in Houston, right in the heart of the industry, to work with equipment manufacturers in the industry to understand this technology.

The best companies that I have interacted with are applying the principles of high reliability organizations, the same types of principles that are used in the space program and the airline industry, where they really look at everything that could potentially go wrong, they assume that it will, and then they build in the barriers to see that it doesn't happen. Or, if it fails, it will fail safe. That is the approach——

Dr. WITTMAN. So you believe, then, that what they are doing is applying technology to minimize risk to the lowest possible—under current technology?

Admiral SALERNO. At the leading edge, yes, that is what I am seeing.

Dr. WITTMAN. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you. Mrs. Dingell.

Mrs. DINGELL. Thank you, Mr. Chairman. Thank you, Director Salerno, for joining us today. I know being here isn't probably the way you wanted to spend your Wednesday morning.

One of the things, though, that we have learned from the Deepwater Horizon oil spill is that we are not very good at getting the oil out of the water. And I want to build on what Representative Capps was talking about, because—and I know you spoke about improved technology.

But even though many people think of oil spill response as going out there with the booms and the skimmers and taking it all out of the water—and you say it has gotten better, but I have been told the estimates are that only about 3 percent of the oil released by the Macondo well was collected that way. For the rest we either had to burn it, which took care of only about 5 percent, or use millions of gallons of chemical dispersants, which don't actually remove the oil from the water, and as we all know, have their own side effects and things that we become very worried about, what is happening when those chemicals are in the water.

And it appears that our ability to physically remove oil from water is no better now than it was decades ago. And, obviously, we have all been talking about how that concerns us, and I know that you are working on it. It is a threat to all of us, and each of us is also worried about the regions that we come from.

In 2010, the largest inland oil spill that has occurred in our Nation's history occurred in Marshall, Michigan, and it resulted in 843,000 gallons polluting the Kalamazoo River. This heavy crude oil, as you know, was difficult to clean up, and although all portions of the river are finally open to the public for use, nearly 4 years after the spill we still don't fully understand the impact of what the spill has had on the ecological systems of the regions. And there are issues, as you know, and we are all talking about it.

One problem in particular that matters in the Midwest is our existing cleanup equipment, and how it will work in icy conditions, if an oil pipeline spill were ever to happen in the Great Lakes, which, God forbid, will never happen. But we keep praying these things aren't going to happen, and they do. The Coast Guard has been conducting equipment deployment tests in icy waters off the northern coast of Michigan in recent years, but those tests don't look at how well this equipment can remove oil when ice is present.

What is BSEE doing to improve our ability to respond to oil spills in icy conditions? And do we have assurances that we will be able to get more oil out of the water than we did when the Deepwater Horizon occurred? Which I know you talked a little bit about when Lois was asking you this.

Admiral SALERNO. Your numbers are accurate. Mechanical recovery in open water is not very effective. You are correct about insitu burning, dispersant use. Probably the most effective technique was capture at the well head. But no response technology is 100 percent effective, and they are all very much dependent on conditions.

So, you are right, additional R&D needs to be done. We need better equipment, we need better techniques. And work is being done, certainly by BSEE, also the Coast Guard, NOAA, EPA, on how to improve response capability in the ice. And, in fact, we have used our on-site facility in New Jersey with that. We have even choked it with ice to test equipment in those conditions.

But it underscores the point that our best approach here is to keep the oil in the tube. We double down on prevention. That is why we are putting so much emphasis on working with the companies, understanding the technology, and making sure the barriers are there so oil doesn't get in the water in the first place.

Mrs. DINGELL. Well, I applaud that. And, as I say, we all hope that that happens. But life doesn't tend to happen the way we want it to be. So I am glad that you are working on it, but I think the point is that we are very far away from being effective, and being able to clean up oil spills. And oil spills in icy conditions is really frightening.

And I hope, Mr. Chairman, that the committee will continue to focus on this issue as we move forward. I happen to believe we need to be doing much more, in terms of oil spill response and preparing for future incidences. One of the many proposals from the President's Oil Spill Commission that Congress has ignored so far is encouraging more private investment in oil spill response technology, through the use of public-private partnerships. And it seems that this is a model that we could make work here.

Could you please discuss the current level of private investment in oil spill response technology, and whether you think more is needed?

Admiral SALERNO. Well, most of the Nation's response capability is in the private sector. There is government capability. Naturally, the Coast Guard has some, EPA has some. But, by and large, it is oil spill response organizations that are relied upon to provide this technology. And, certainly since Deepwater Horizon, for——

The CHAIRMAN. I am sorry, I was interested in that, too, but we will have another round here.

Admiral SALERNO. Happy to continue.

Mrs. DINGELL. Thanks, Mr. Chairman.

The CHAIRMAN. Love the private sector.

Mr. Hice.

Dr. HICE. Thank you, Mr. Chairman, and appreciate you being here, Director. I think we owe it to the 11 individuals who lost their lives to be here and discuss and examine safety improvements, and I appreciate you being here.

It is fair to say that it is absolutely not possible to eliminate all risk from the industry. Is that correct?

Admiral SALERNO. That is correct.

Dr. HICE. So, that being the case, what you are all about, and what the industry is trying to do as a whole, is to develop regulations, protocols, standards that, as much as possible, eliminates as much risk as possible.

Admiral SALERNO. Correct.

Dr. HICE. OK. So, I know so many questions, we have gone down this, but based on that, do you personally believe that the stakeholders, as well as the industry as a whole, is taking that charge seriously, to, as much as possible, eliminate as much risk as possible from every perspective possible?

Admiral SALERNO. I would say it is a mixed bag. I have met with some companies that are the leading lights in this that have really put a lot of emphasis on it, and are doing a wonderful job in managing risk. I have encountered some others where I question their commitment to safety.

And mention was made earlier about some of the accidents that have occurred, and we have seen accidents that have occurred, and fatalities that have occurred since Deepwater Horizon, where it was a complete absence of a safety culture. So we are working to remedy that. That is one of the reasons why we are approaching a risk-based approach to inspection, so that we can look at individual company performance, and tailor our resources and energies to address the greatest risks.

Dr. HICE. So, with those companies that are not taking safety seriously, what percentage would you say, just off the top of your head, are those type of companies?

Admiral SALERNO. I would say there is maybe 10 percent of the ones that I have interacted with that are worrying me, that I felt that they did not have the proper safety culture, they did not communicate safety messages to their workforce, they did not interact meaningfully with their contractors. And much of the work that is done offshore is done by contractors and subcontractors. So when you have these disconnects, you set yourself up for——

Dr. HICE. So what is being done to those—other than just communication, is there anything to help pressure them to——

Admiral SALERNO. Yes. We do meet with companies and review their performance. If performance has been substandard, we visit them more frequently. And we are working to develop a much more refined, sophisticated risk management model, working with one of the national laboratories, so we can make this whole process much more——

Dr. HICE. So all that is taking place is meetings. There is no——

Admiral SALERNO. No, no, that is not what I am saying. We visit more frequently. We have greater oversight where we have areas of concern. So we visit more frequently, inspectors going out to the——

Dr. HICE. And what if they don't comply?

Admiral SALERNO. If they don't comply, we have a range of enforcement options. The most serious cases, we could order them to shut-in.

Dr. HICE. OK.

Admiral SALERNO. And we do that.

Dr. HICE. All right. Thank you for that. According to the current 5-year plan by the Department of the Interior, all this includes some potential Atlantic lease sale type things, which is very important to my district, as a whole. How have the regulatory changes, including the proposed blowout preventers—has that in any way impacted or changed the potential offshore lease in the Atlantic?

Admiral SALERNO. They would apply to any lease holding activity that eventually takes place. But it doesn't directly affect the lease sale itself.

Dr. HICE. So that can still go forward?

Admiral SALERNO. Right.

Dr. HICE. OK.

Admiral SALERNO. The two are separate.

Dr. HICE. All right. So, just as an overall summary, I guess, what are some of the lessons, both from the stakeholders, industry as a whole, that have been learned to ensure that safety—that the new areas utilizing the latest technology and so forth for safety is in place?

Admiral SALERNO. Well, obviously, we have the new rules that will go out. They don't take effect right away. However, the industry itself has set standards in place and, for example, forward blowout preventers. And many of the companies that are building new rigs are applying those standards in their design specifications for new blowout preventers and new rigs. So, we are already seeing some of that taking effect.

As far as safety management systems, that is, again, an area of continued emphasis by us, and by the leading companies in the industry.

Dr. HICE. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you. Mrs. Torres.

Mrs. TORRES. Thank you. Director Salerno, in the aftermath of the Deepwater Horizon disaster, a number of safety reforms have been enacted or implemented, including the establishment of the Bureau of Safety and Environmental Enforcement, as a separate entity charged with regulating drilling operations on the Outer Continental Shelf. This has led to improvements. I should say much improvement in processes for inspection, investigating, and enforcement.

But we have also heard about the role human error and inadequate training programs played in this tragedy. A competent and highly trained workforce will play a key role in preventing these types of disasters in the future.

My two questions for you are, can you expand on the challenges the Bureau is facing regarding the recruitment and retention of

skilled workers? And, two, which job classifications are the most difficult to staff? And what steps is the Bureau taking to remedy the situation? Included in that is pay scale.

Admiral SALERNO. Yes, thank you. And, actually, that is one of the greatest strategic challenges we face, is attracting and retaining a quality workforce. We struggle with that. We are in competition with industry for the same talent. Many of our people we hire from industry. But many of them go back to industry, because we cannot compete on a salary basis. We offer other advantages, and many people, thankfully, are motivated by a desire to serve.

We have had help from Congress on salaries for engineers and for scientists, so we have had some special salary rates. That gets renewed in our budget every year. We are hoping to make that permanent. Inspectors, we do not have that authority, but we have been able to do some things internally to help boost salary rates there. We are working with the Office of Personnel Management to try to make some of these things a little more permanent, but this will be an ongoing challenge.

And looking to the future, we are very much engaged in reaching out to youth groups, to high schools and colleges, really trying to motivate them to consider public service. And certainly returning veterans are a prime source, as well.

Mrs. TORRES. And, if I may suggest, incentives for years of service may be an area where you can look at.

I would like to yield the rest of my time to Congresswoman Dingell to allow you time to finish answering her question.

Mrs. DINGELL. Thank you, Mr. Chairman. I will just go back.

And if you could talk more about—we just, as part of the discussion, said that we hadn't made the progress we want to, in terms of the technology. And I understand the private sector is whose technology you are using. But are they investing in research? Where is the research happening? And are we doing enough research, public or private, to improve the technology for cleanups when we need them?

Admiral SALERNO. Right. Well, I think I left off talking about subsea containment capability, and that is where there has been a tremendous amount of research and investment, and capital investment in creating capabilities to address the kinds of problems we had in the deepwater during the Deepwater Horizon event.

Mrs. DINGELL. Now, is that government doing it, or the private sector, or both?

Admiral SALERNO. That is private sector investment. There is a government requirement that capability be developed. It was a performance requirement. And then industry responded, essentially, by forming a consortium so they could pool resources and develop the capability to meet that requirement.

As far as——

Mrs. DINGELL. And you think they are investing enough in it?

Admiral SALERNO. Yes, I have been down and I have looked at it, at the two major companies that provide that capability in the Gulf of Mexico, and I have also looked at the capability that will be deployed in the Arctic, personally. So, yes, the investment is being made.

Mrs. DINGELL. Thank you, Mr. Chair.

The CHAIRMAN. Thank you.

Mr. Hardy.

Mr. HARDY. Thank you, Mr. Chairman. Thank you, Mr. Salerno, for being here.

Most generally, in other disasters, we see a lack of communication across different Federal agencies, or stove-piping, as one of the points of failure. For instance, the issue of the 911 Commission report. In the wake of the Macondo, the response was opposite. The split-up of the former Materials and Management Service into three separate agencies, splitting up the revenue collection into a separate bureau makes sense. However, I believe the mission of safe offshore operations is not exclusive to BSEE or BOEM. Also, the factor of safety into leasing decisions and revenue exploration plans.

Would it not be beneficial to have these two agencies working in concert together, given the missions, while different, have the same end goal? Safe and measured offshore energy deployment—in fact, would safety be further enhanced by having these two agencies interact more regularly, especially because BOEM is reviewing exploration plans and BSEE is reviewing application permits? Both of these documents set plans developing prospect of the overall goal of safety does not end at the agency's doorstep.

Admiral SALERNO. I think the emphasis that each agency has is an appropriate breakdown of responsibilities. As far as coordination goes, it is very good. In every location where I have a regional office, there is a counterpart, BOEM regional office. I am colocated with the BOEM Director.

You are absolutely correct, we do share information: geological information, scientific, permit information, and so forth. That is occurring back and forth. So, I don't foresee a real problem, going forward, with the way we are structured. There are certain things that we will do. I think we will even enhance the ability to share information, some IT tools and business management capability that will facilitate easier movement of data across bureau boundaries. But the personnel connections are very strong.

Mr. HARDY. Another way of looking at this for me is what kind of interaction do we have between the agencies and the offshore development folks, being as how they should be the ones paying for the cost of these incidents? Are they working with you, with the agencies, to help come up with a better mousetrap, so to speak? Is that being utilized, their expertise, also?

Admiral SALERNO. As far as the private sector?

Mr. HARDY. The private sector——

Admiral SALERNO. Yes, absolutely. My feeling is I could not be an effective regulator if I did not interact in a meaningful way, in a regular way, with the industry that I regulate. So I have to understand where they are going, from a technological standpoint, what their plans are, and the equipment that they plan to use. So that is ongoing, and it permeates our entire organization. We have to understand it.

Mr. HARDY. Thank you, Mr. Chairman. I yield back.

The CHAIRMAN. Thank you. Mr. Grijalva.

Mr. GRIJALVA. Thank you very much. And thank you, Director, for being here.

A quick question. So in that interim 5 years, much of the discussion that we have had at this committee level has been about opening up new areas—Arctic, Atlantic—the issue of increasing the number of leases, processing that. Spent a lot of time on the 5-month time-out and what the motivation behind that really was. But the issue of safety, which we are dealing with to some extent today, and the issue of accountability haven't been the top point of discussion. Had to do with the Administration, primarily, how to embarrass that administration. And long after that 5-month time-out, we still kept talking about that subject.

But I want to ask you. The companies in the interim still enjoy an extremely low oil spill liability limit. They face minimal negligible fines for violating regulations. And I know that Interior has done what it can to account for inflation. But let me ask you, as then-Secretary Salazar testified in 2011, the issue of civil and criminal penalties increasing the issue of raising the liability limits, and the consequential fines of violations of regulation all being something that he felt was very important in the comprehensive look at safety and accountability. How do you feel about that?

Admiral SALERNO. Well, I do believe that, for example, the civil penalty provisions that we currently have available to us probably made sense when the law was written. They look pretty mild, by modern standards: $40,000 per day for a violation is really not that much for this industry.

We look at civil penalties as one of a range of tools. You know, our goal is to get people to comply. If we have to use a tool to get their attention, we will do that. But that probably could stand a fresh look.

Mr. GRIJALVA. And that fresh look can only be accomplished by Congress at that point.

Admiral SALERNO. Yes——

Mr. GRIJALVA. I think the Secretary talked about that not only as a preventative tool, but also as a deterrent. So I appreciate your answer, and I yield back.

The CHAIRMAN. Thank you. Director, let me ask you a couple of questions. If I could follow up on what Mrs. Torres started with you, in your testimony you did say that your skill in staffing gaps at the agency are significant, they are crucial for you in being effective in your mission. GAO reports said that your attrition rate is about double that of the typical average agency. Why is that double?

Admiral SALERNO. It is very difficult, competing with industry on salary. That is, I think, a big part of it. I think, particularly my inspectors, their entry level is like a GS–7. Once they are skilled and trained up, they are much more valuable in the private sector, and, quite honestly——

The CHAIRMAN. OK. Well, let me finish on that, then.

Admiral SALERNO. OK.

The CHAIRMAN. Where do you go to recruit? Are you recruiting in colleges, or are you recruiting from the industry?

Admiral SALERNO. All of that. And returning veterans, as well. So I have—probably my inspector staff, close to 90 percent of them have some industry background. Many of them, probably half of

them, are veterans. And we routinely visit colleges, petroleum engineering schools and so forth.

The CHAIRMAN. So are you getting more from industry than you are losing to industry?

Admiral SALERNO. It is two steps forward, one step back, really. We hired, I think, about 100 people last year. I think our net gain was probably about 29, just because, you know, people come in, and then they leave.

And I am also losing people due to retirements. The Baby Boom generation, people that have been around for many years are stepping down. So, as I bring people in, even fresh faces, I am losing some of the older hands.

The CHAIRMAN. We are not doing enough in petroleum and energy engineering education, are we? That is rhetorical. That is a statement.

In 2012, Congress gave you the authorization for special pay authority to hire and keep these people. Is that working? Does it need to be continued? Does it need to be upgraded?

Admiral SALERNO. Absolutely needs to be continued, and I would love to see it upgraded. Without it, we would be in far worse shape.

The CHAIRMAN. So what specifically do you need to be more competitive, then, that Congress can give you in that appropriations process?

Admiral SALERNO. That continued authorization to pay special salary is vital. So if that could be continued, it would be extremely helpful.

The CHAIRMAN. But if we tried to up it in some way to assist you in maintaining or at least limiting your attrition rate, what would you recommend that be?

Admiral SALERNO. Can I get you more specific information on that, sir, rather than give you an off-the-cuff answer? I think it would be helpful to increase that. Salary is the biggest selling point for anybody looking for a job. And we have been trying to supplement our salary offering with other benefits of Federal service, but it doesn't always put food on the table.

The CHAIRMAN. OK. That would be—I recognize that. It would be helpful, although I am not an appropriator. Other than that, it still would be helpful.

With that, do you have any other questions?

Mr. GRIJALVA. No.

The CHAIRMAN. Director, we appreciate your time and your patience to be with us here. I thank you for coming.

Under our rules, there may be other questions that other Members who may or may not be here have of you. The rule asks that our hearing record stay open for 10 days for responses. We would appreciate it if you would be responsive to any other questions that we may send to you.

With that, once again we thank you for joining us. And we would like to call up the second panel, which includes Ms. Holly Hopkins, who is a Senior Policy Advisor for Upstream and American Petroleum Institute; Charlie Williams, who is the Executive Director of the Center for Offshore Safety; Mr. David Coatney, who is the Managing Director of HWCG; and Dr. Steven Murawski, who is a professor at the University of Southern Florida.

And if you could join us, I would appreciate that, as well.

[Pause.]

The CHAIRMAN. We thank you for coming the great distances that you have come, and also for your patience with us so far.

I have to remind the witnesses—same rule as was applied earlier—your oral statements are limited to 5 minutes, but your entire statement here is on the record.

And, once again, you have the clock in front of you. When it hits red, that means the 5 minutes have elapsed, and I would like you to end at that time.

I can give you just a second to get prepared. Ms. Hopkins, are you ready to go? All right, let's start with you, and I will recognize you for your 5-minute testimony.

STATEMENT OF HOLLY HOPKINS, SENIOR POLICY ADVISOR, UPSTREAM, AMERICAN PETROLEUM INSTITUTE, WASHINGTON, DC

Ms. HOPKINS. Thank you. Good morning, Chairman Bishop and Ranking Member Grijalva, and members of the committee. My name is Holly Hopkins. I am a Senior Policy Advisor at the American Petroleum Institute. My responsibilities include advocating for and advancing offshore safety.

Following the Macondo incident, I managed two of the four joint industry task forces that were created to make recommendations to further enhance offshore safety. I am also extensively engaged in the development of API standards that promote safe and responsible development of the Nation's offshore oil and natural gas resources.

API has more than 625 member companies which represent all segments of America's oil and natural gas industry. Our industry supports 9.8 million American jobs, 400,000 jobs in the Gulf of Mexico alone, and 8 percent of the U.S. economy. We appreciate the opportunity to participate in today's hearing.

I would like to take a moment to remember the 11 workers who lost their lives on April 20, 2010, as well as their families. These husbands, fathers, sons, and brothers are a reminder that we must continue to improve safety in our industry. While the industry is committed to a goal of zero fatalities, zero injuries, and zero incidents, our industry takes any safety and environmental incident as a call to learn and to improve technology, training, operational procedures, and industry standards and best practices.

Given the limited time for my opening statement, I refer you to my written testimony, which goes into further detail than I will be able to present today.

Immediately after the Macondo incident, the U.S. oil and gas industry launched a comprehensive review of offshore safety to identify potential improvements in offshore operating procedures, equipment, subsea wall control and containment, and oil spill preparedness and response. Four joint industry task forces were formed to focus on critical areas of Gulf of Mexico offshore activity. Teams were comprised of industry expert members at API, the International Association of Drilling Contractors, the Independent Petroleum Association of America, the National Ocean Industries Association, and the U.S. Oil and Gas Association.

Sessions began in early spring of 2010 to provide recommendations to the U.S. Department of the Interior. The joint industry task forces were not involved in a review of the incident. Rather, they brought together industry experts to identify best practices with the definitive aim of enhancing safety and environmental protection. The ultimate goal for these task forces was to improve industry drilling standards, to form comprehensive safe drilling operations, well containment and intervention capability, and oil spill response capability, not only through evaluation and revision of industry guidelines and procedures, but also active engagement with regulatory processes.

Many of the improvements have been made through creation or revision of API global standards. The API standards process is accredited by the American National Standards Institute, and all API standards are reviewed on a regular basis to ensure they remain current. API standards are developed in an open and transparent process, and are the most widely cited oil industry standards from Federal, state, and international regulators.

API has 224 exploration and production standards that address offshore operations. And since 2010, we have published over 100 new or revised E&P standards. Some of the highlights include new documents on deepwater well design and construction, well construction interface guidelines, subsea capping stacks, high-pressure, high-temperature design guidelines, personal protective equipment selection for oil spill responders, and then revised and updated standards on blowout prevention equipment systems, isolating potential flow zones during well construction, remotely operated tools and interfaces on subsea production systems, sub-surface safety valve equipment, and choke-and-kill systems.

The Macondo incident was a tragedy that cost 11 lives, and the result was a call to action to industry to identify and develop multiple improvements in offshore equipment, operating procedures, well design, well control equipment, and overall safety systems. These changes have significantly enhanced the industry's ability to prevent, contain, and respond to any potential incident or spill. These activities have created a model safety program in the Gulf of Mexico and beyond for workers and the environment.

As always, standards and best practices will continue to be reviewed on an ongoing basis in order to protect the environment and promote the safe and responsible development of energy resources that help fuel the American economy. The oil and natural gas industry and the Federal Government have, together, taken great strides to protect workers and the environment to improve the safety of offshore drilling operations. As the co-chairs of the President's Oil Spill Commission said in 2014, "Offshore drilling is safer than it was 4 years ago." The industry stands committed to safe and environmentally responsible development.

Thank you. That concludes my statement.

[The prepared statement of Ms. Hopkins follows:]

PREPARED STATEMENT OF HOLLY A. HOPKINS, SENIOR POLICY ADVISOR, UPSTREAM AND INDUSTRY OPERATIONS, API

Good morning Chairman Bishop, Ranking Member Grijalva, and members of the committee. My name is Holly Hopkins, I am a Senior Policy Advisor at the American Petroleum Institute, and my responsibilities include advocating for and

advancing offshore safety. Following the Macondo incident, I managed two of the four Joint Industry Task Forces that were created to make recommendations to further enhance offshore safety. I am also extensively engaged in the development of API standards that promote safe and responsible development of the Nation's offshore oil and natural gas resources. API has more than 625 member companies, which represent all sectors of America's oil and gas industry. Our industry supports 9.8 million American jobs and 8 percent of the U.S. economy. We appreciate the opportunity to participate in today's hearing.

I'd like to take a moment to remember the 11 workers who lost their lives on April 20, 2010, as well as their families. These husbands, fathers, sons and brothers are a reminder that we must continue to improve safety in our industry. While the industry is committed to a goal of zero fatalities, zero injuries and zero incidents, our industry takes any safety or environmental incident as a call to learn and to improve technology, training, operational procedures, and industry standards and best practices.

Immediately after the Macondo incident in the Gulf of Mexico (GOM), the U.S. oil and natural gas industry (Industry) launched a comprehensive review of offshore safety to identify potential improvements in spill prevention and intervention and response capabilities. Four Joint Industry Task Forces (JITFs) were assembled to focus on critical areas of GOM offshore activity: the Joint Industry Offshore Operating Procedures Task Force (Procedures JITF), the Joint Industry Offshore Equipment Task Force (Equipment JITF), the Joint Industry Subsea Well Control and Containment Task Force (Subsea JITF), and the Joint Industry Oil Spill Preparedness and Response Task Force (OSPR JITF). Teams were composed of industry expert members of the American Petroleum Institute (API), International Association of Drilling Contractors (IADC), Independent Petroleum Association of America (IPAA), National Ocean Industries Association (NOIA), and the United States Oil and Gas Association (USOGA). Sessions began in early spring of 2010 to provide recommendations to the U.S. Department of the Interior (DOI) in the areas of prevention, intervention and oil spill response. The JITFs were not involved in the review of the incident; rather they brought together Industry experts to identify best practices in offshore drilling operations and oil spill response, with the definitive aim of enhancing safety and environmental protection. The Procedures, Equipment, and Subsea JITFs, as they are called, all issued final reports in March of 2012 while the OSPR JITF released a progress report in November of 2011 and has projects lasting into 2015. The ultimate goal for these JITFs is to improve Industry drilling standards to form comprehensive safe drilling operations, well containment and intervention capability, and oil spill response capability; not only through evaluation and revision of Industry guidelines and procedures, but also active engagement with regulatory processes.

The JITFs worked with trade associations, DOI's Bureau of Safety and Environmental Enforcement (BSEE) and Bureau of Ocean Energy Management (BOEM), U.S. Coast Guard (USCG), U.S. Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), National Response Team (NRT), the independent Presidential commission (National Commission on the Deepwater Horizon Oil Spill and Offshore Drilling), the Chemical Safety Board (CSB), the National Academy of Engineering (NAE), Members of Congress, and others as they considered the Macondo incident and potential changes in Industry regulation.

SUMMARY OF JITFs

Joint Industry Offshore Operating Procedures Task Force

The Procedures JITF reviewed critical processes associated with drilling and completing deepwater wells to identify gaps between existing practices and regulations and Industry best practices. Their recommendations focused on the following five areas: cementing; loads and resistance; fluid displacement and negative testing; abandonment and barriers; and safety case. Their recommendations were intended to move Industry standards to a higher level of safety and operational performance and resulted in either revision or new development of API guidelines, which are considered Industry best practices for global oil and gas operations.

Joint Industry Offshore Equipment Taskforce

The Equipment JITF reviewed current BOP equipment designs, testing protocols and documentation. Their recommendations were designed to close any gaps or capture improvements in these areas and focused on: safety case regime; a robust management of change (MOC) process; accessing shear data; remotely operated vehicle (ROV) interface; and acoustic reliability. After submitting its recommendations, the

Equipment JITF formed three subgroups to evaluate information regarding BOP shearing capabilities, BOP acoustics systems, and BOP/ROV interface. These subgroups each produced white papers regarding their topics in January of 2011.

Joint Industry Subsea Well Control and Containment Task Force

The Subsea JITF reviewed technologies and practices for controlling the release of oil from the source of a subsea well where there has been a loss of control. These include equipment designs, testing protocols, research and development (R&D), regulations and documentation to determine if enhancements were needed. The JITF identified five key areas of focus for GOM deepwater operations:

- Well containment at the seafloor;
- Intervention and containment within the subsea well;
- Subsea collection and surface processing and storage;
- Continuing R&D; and
- Relief wells.

The Subsea JITF focused primarily on potential operational scenarios after a well blowout has occurred. Consideration was also given to containment of hydrocarbons that may leak from subsea production system equipment (e.g. subsea production well) and casing stubs at the seafloor. The task force did not review blowout preventers (BOPs), Emergency Disconnect Systems (EDS), autoshear systems, deadman systems, or ROV/BOP interfaces (pumps and hot stab). These items were reviewed under the Equipment JITF.

The Subsea JITF developed 29 recommendations on specific steps to enhance the Industry's subsea control and containment capability, including 15 immediate action items.

One of the first recommendations implemented was to provide near-term response capability for well containment. This was achieved through the establishment of collaborative containment companies such as Marine Well Containment Company (MWCC) and HWCG, LLC founded in 2010 to provide containment technology and response for the unique challenges of capping a well. These companies develop and operate quickly deployed systems that are able to stem the uncontrolled flow from a well either by sealing it or directing it into storage vessels on the surface. More information on these companies can be found at http://www.marinewellcontainment.com and http://www.hwcg.org.

Joint Industry Oil Spill Preparedness and Response Task Force
http://oilspillprevention.org/oil-spill-research-and-development-cente

The OSPR JITF was formed to review the industry's ability and capacity to respond to an oil spill of national significance. The task force addressed both the preparedness for response and the actual response to crude oil or related oil products after they have escaped containment during Exploration & Production activities and entered into the surrounding environments (e.g., subsea, surface, shoreline, etc.).

Following the September 3, 2010, OSPR JITF preliminary recommendations report, the API Oil Spill Preparedness and Response Subcommittee (OSPRS) convened to address the recommendations made by the JITF. The OSPRS was tasked with leading Industry efforts to develop and implement plans that addressed the report recommendations while staying abreast of related initiatives. The OSPRS has maintained and enhanced collaboration with international organizations (e.g., International Association of Oil and Gas Producers-Global Industry Response Group (IOGP-GIRG) and the Arctic Response Technology Joint Industry Program (JIP)), well containment companies, Oil Spill Response Organizations (OSROs), and academic institutions such as Coastal Response Research Center (CRRC) and the Gulf of Mexico Research Initiative (GOMRI). The subcommittee also reviewed and commented on emerging materials related to oil spill response, such as the Presidential Commission Findings, Incident Specific Preparedness Review, draft NRT subsea dispersant guidance, BOEM/BSEE planning guidance, and a number of scientific reports (e.g., Operational Science Advisory Team Report).

The OSPRS spent several months developing and prioritizing project plans to address each preliminary recommendation, and subsequently received approval and Industry funding commitment for a multi-year work program. The OSPRS divided the recommendations into seven categories, or work streams, as outlined in the original report, specifically:

- Planning
- Dispersants
- Shoreline Protection and Cleanup

- Oil Sensing and Tracking
- In-Situ Burning
- Mechanical Recovery
- Alternative Technologies

Within each category there are a number of projects being worked by individual project teams. These individual project teams are led by a member of the OSPRS. The teams have developed scoping documents and project plans complete with milestones and are in the process of implementation. In some cases projects have endorsed budgets for one or more years to allow access to contractors/consultants or other support services to complete studies, research, workshops, etc.

These projects envision collaboration among Industry, government, and academia. Some project teams will carry out large-scale research studies while other teams will assume a monitoring and engagement role if similar initiatives are being conducted by other entities (such as the Federal Government).

API and the oil and natural gas industry have established a robust oil spill response research and development program that oversees more than 25 projects in the eight areas previously outlined (planning, mechanical recovery, dispersants, in-situ burning, remote sensing, shoreline protection, alternative technologies). While a great deal of attention continues to be given to offshore incidents, further focus is also being directed toward near-shore and inland spill response, and industry continues to engage with Federal stakeholders, science and the academic community on these areas of focus.

Based on the assessment conducted immediately after the Macondo incident, a number of publicly available reports and guidance documents have also been created, including:

- Spill Response Planning:
  - —API Training and Exercise Guidelines
  - —Guidelines for Offshore Oil Spill Response Plans
  - —Personal Protective Equipment Selection for Oil Spill Responders
  - —Net Environmental Benefit Analysis (NEBA) Graphical Briefing
- Oil Sensing & Tracking
- Remote Sensing Planning Guidance
- Dispersants:
  - —Dispersants Fact Sheet 1—Introduction to Dispersants
  - —Dispersants Fact Sheet 2—Dispersants and Human Health and Safety
  - —Dispersants Fact Sheet 3—Fate of Oil and Weathering
  - —Dispersants Fact Sheet 4—Toxicity and Dispersants
  - —Dispersants Fact Sheet 5—Dispersant Use Approvals in the United States
  - —Dispersants Fact Sheet 6—Trade Offs
  - —Dispersants Fact Sheet 7—Aerial Vessel
  - —Dispersants Fact Sheet 8—Subsea and Point Source Dispersant Operations
  - —Dispersant Fact Sheet 9—Dispersant Use & Regulation Timeline
  - —Dispersant Fact Sheet 10—Dispersant Use in the Arctic Environment
  - —Industry Recommended Subsea Dispersant Monitoring Plans
  - —API JITF Subsea Dispersants Injection Newsletters
  - —The Role of Dispersants in Oil Spill Response
  - —SINTEF Dispersants Effectiveness Report—Phase I
- In-Situ Burning
- Mechanical Recovery
- Deepwater Horizon Mechanical Recovery System Evaluation Technical Report 1143
- Shoreline Protection:
  - —Oil Spills in Marshes
  - —Subsurface Oil Detection Report
  - —Subsurface Oil Detection Field Guide
  - —Subsurface Oil Detection and Delineation in Shoreline Sediments Phase 2—Final Report
  - —Shoreline Protection on Sand Beaches (aka Berms and Barriers) Report

—Shoreline Protection on Sand Beaches (aka Berms and Barriers) Guide
—Mechanized Cleanup of Sand Beaches Report
—Tidal Inlet Protection Strategies (TIPS) Report
—Biodegradation & Bioremediation on Sand Beaches Report

- Alternative Response Technologies
- Evaluation of Alternative Response Technology Evaluation (ARTES) Technical Report 1142
- Educational Media: Dispersants Role in Biodegradation Video; Net Environmental Benefit Analysis Instructional Video; Principles of Oil Spill Prevention and Response Instructional Video
- Spill Prevention YouTube Channel
- OilSpillPrevention.org Website
- Guidance on the creation of offshore oil spill response plans
- An evaluation of the mechanical recovery systems used at sea during the Macondo incident
- A report (and associated field guide) for spills on sand beaches and shoreline sediments, including protection techniques and detection and response capabilities
- An evaluation of the process by which alternative technologies are reviewed for use during an oil spill

The industry has also invested in two international oil spill preparedness and response programs focused on improving industry operational capabilities in all parts of the world including the Arctic. These two programs are coordinated with API's activities, and together, they represent a comprehensive, global approach to continued advancements in oil spill preparedness and response. A newsletter providing periodic updates on these activities can be found at http://www.api.org/environment-health-and-safety/clean-water/oil-spill-prevention-and-response/api-jitf-subsea-dispersant-injection-newsletter.

The full suite of industry reports and recommendations are available at http://www.api.org/oil-and-natural-gas-overview/exploration-and-production/offshore/api-joint-industry-task-force-reports.

PREVENTION: INDUSTRY STANDARDS

Reviewing and improving industry standards has always been a top priority. Since 1924, API has been the leader in developing industry standards that promote reliability and safety through the use of proven engineering practices. The API standards process is accredited by the American National Standards Institute (ANSI), which is the standards authority here in the United States and accredits similar programs at several national laboratories. As part of API's accredited process all API standards are reviewed on a regular basis to ensure they remain current. API standards are developed in an open and transparent process which includes subject matter experts from Academia, Government and Industry and are the most widely cited oil industry standards by Federal, State, and International Regulators.

API has 224 exploration and production standards that address offshore operations, covering everything from blowout preventers to comprehensive guidelines for offshore safety programs, and more than 100 have been incorporated into Federal regulation. Since 2010 API has published over 100 new and revised exploration and production standards; key standards include the following:

New Documents:

- RP 96, *Deepwater Well Design and Construction*, 1st Edition, March 2013

  In June 2010, an API work team held a kick-off meeting to outline initial content for the new API RP 96. This document provides well design and operational considerations to safely design and construct deepwater wells with maximum reliability. There was coordination with the Subsea JITF and the API Standard 53 workgroup to ensure their recommendations were addressed in the document as well.

- Bulletin 97, *Well Construction Interface Guidelines*, 1st Edition, April 2011

  In July 2010, the Procedures JITF held a kick-off meeting to outline initial content for Bulletin 97. Bulletin 97 provides guidance on information that is to be shared regarding well construction and rig-specific operating guide-

lines. It is intended to align the lease operator's safety and environmental management system (SEMS) with drilling contractor's safe work practices (CSWP). The WCID-SEMS is a bridging document that includes the elements identified in API 75 within the context of well construction activities. It is understood that work processes vary between operators and contractors, which should be honored in the development of the WCID document.

- Specification Q2, Quality Management System Requirements for Service Supply Organizations for the Petroleum and Natural Gas Industries, 1st Edition, December 2011
- RP 17W, Subsea Capping Stacks, 1st Edition, July 2014

  In August 2011 a workgroup was formed to create a new document on subsea capping stack recommended practices for design, manufacture, and use. The document applies to the construction of new subsea capping stacks and can be used to improve existing subsea capping stacks. The document can aid in generating a basis of design (BOD) document as well as preservation, transportation, maintenance, testing documents, and operating instructions.
- TR 17TR8, High-temperature, High-pressure Design Guidelines, 1st Edition, February 2015

  This technical report is to provide design guidelines for oil and natural gas subsea equipment utilized in high-pressure high-temperature (HPHT) environments.
- RP 17V, Recommended Practice for Analysis, Design, Installation, and Testing of Safety Systems for Subsea Applications, 1st Edition, February 2015
- RP 98, Personal Protective Equipment Selection for Oil Spill Responders, 1st Edition, August 2013

  This RP was developed from a recommendation of the OSPRS and provides general information and guidance for the development of oil spill responder personal protective equipment (PPE) control measures. Although an extensive amount of information has been developed on the topic of PPE for emergency responders, this document focuses on the PPE selection process as well as its technical evaluation based on the hazards present.
- TR 1PER15K–1, Protocol for Verification and Validation of High-Pressure and High-Temperature Equipment, 1st Edition, March 2013

  This report focuses on an evaluation process for HPHT equipment in the petroleum and natural gas industries which includes design verification analysis, design validation, material selection considerations, and manufacturing process controls necessary to ensure the equipment is fit-for-service in the applicable HPHT environment.
- RP 2SIM, Structural Integrity Management of Fixed Offshore Structures, 1st Edition, June 2013

Revised Documents:

- Standard 53, Blowout Prevention Equipment Systems for Drilling Wells, 4th Edition, November 2012

  Based on the Equipment task force's recommendations, an API work team began development on the fourth edition of API RP 53. The purpose of the document is to provide requirements on the installation and testing of blowout prevention equipment systems on land and marine drilling rigs (barge, platform, bottom-supported, and floating). The fourth edition was updated to a Standard.
- Standard 65–2, Isolating Potential Flow Zones During Well Construction, 2nd Edition, December 2010

  API Recommended Practice (RP) 65—Part 2 was first published in May 2010. API then revised the document based on (1) lessons learned from the Macondo incident; and (2) alignment with the planned Deepwater Well Design and Construction RP (discussed below). The revisions resulted in the API RP becoming API Standard 65–Part 2, second edition. The document contains best practices for zone isolation in wells to prevent annular pressure and/or flow through or past pressure-containment barriers that are installed and verified during well construction. Well construction practices that may affect barrier sealing performance are mentioned along with methods to help ensure positive effects or to minimize any negative ones.

- RP 17H, Remotely Operated Tools and Interfaces on Subsea Production Systems, 2nd Edition, November 2014

  Based on recommendations from the Equipment JITF the first edition of API 17H was revised. The second edition provides recommendations for development and design of remotely operated subsea tools and interfaces on subsea production systems in order to maximize the potential of standardizing equipment and design principles.
- Specification Q1, Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry, 9th Edition, June 2013
- Specification 14A, Subsurface Safety Valve Equipment, 12th Edition, January 2015
- Specification 16C, Choke and Kill Systems, 2nd Edition, March 2015

Standards Under Development:

- Specification 16A, Specification for Drill-through Equipment, 4th Edition
- Standard 16AR, Repair and Remanufacture of Blowout Prevention Equipment, 1st Edition
- Specification 16D, Control Systems for Drilling Well Control Equipment and Control Systems for Diverter Equipment, 3rd Edition
- Specification 16F, Specification for Marine Drilling Riser Equipment, 2nd Edition
- Recommended Practice 16Q, Design, Selection, Operation and Maintenance of Marine Drilling Riser Systems, 2nd Edition
- Specification 16R, Marine Drilling Riser Couplings, 2nd Edition
- Specification 16RCD, Drill Through Equipment—Rotating Control Devices, 2nd Edition
- Recommended Practice 16ST, Coiled Tubing Well Control Equipment Systems, 2nd
- 18 Life Cycle Management, 1st Edition

Government-referenced and safety-related standards may be freely viewed online at http://publications.api.org.

SUMMARY

The Macondo incident was a tragedy that cost 11 lives, and as a result, was a call to action to industry to identify and develop multiple improvements in offshore equipment, operations, well design, well control equipment targeted at prevention and containment and new procedures and tools for responding to oil spills. These activities have created a model safety program in the GOM and beyond for well operations crews and the environment. Active participation from and coordination with the public sector, academia, and other stakeholders has been fundamental to turning initial recommendations into genuine plans of action and enhanced safety guidelines. As always, standards and best practices will continue to be reviewed on an ongoing basis in order to protect the environment and promote the safe and responsible development of energy sources that help fuel the American economy.

The oil and natural gas industry and the Federal Government have together taken great strides to protect workers and the environment and to improve the safety of offshore drilling operations. As the co-chairs of the President's spill commission said in 2014, offshore drilling is safer than it was 4 years ago. The industry has placed a particular focus on increasing its ability to (1) prevent spills from occurring, (2) intervene to halt any spill that does occur, and (3) respond to spills with the most effective mitigation measures possible.

The industry stands committed to safe and environmentally responsible development.

QUESTIONS SUBMITTED FOR THE RECORD BY CHAIRMAN ROB BISHOP TO MS. HOLLY HOPKINS, SENIOR POLICY ADVISOR, UPSTREAM

Question 1. In your testimony, you mentioned the many regulations which the Department of the Interior put into place following the Macondo Incident. Are there any examples of regulations that, in the rush to implement, may have impaired

safety, contrary to their original intent? Are there any regulations, proposed or otherwise, now that do so?

Answer. Our primary concern with the Department of the Interior (DOI) regulations is that the Bureau of Safety and Environmental Enforcement (BSEE) and the Bureau of Ocean Energy Management (BOEM) continue to specify procedures and add approval requirements rather than identifying objectives and allowing companies to select the methods that are best for their operations and circumstances, and best for ensuring safe operations. Regulations are seldom the optimal means of achieving safety objectives. They are difficult and lengthy to promulgate, need continuous updating, do not address all circumstances, and foster a compliance mentality. Further, excessive prescription and direction by the regulators discourage individual and corporate innovation, initiative, and complicate efforts to develop the safety culture needed for sustained safety performance excellence.

The key to continuous safety improvement, effective risk management, and the timely application of new technology and procedures is collaboration between government regulators and industry.

An outstanding example of successful collaboration in the OCS regulatory program was the industry-government response after Hurricanes Ivan, Katrina, and Rita damaged offshore drilling and production facilities in 2004 and 2005. Following the 2005 hurricane season, DOI held a meeting with industry leaders and identified issues of concern. Industry representatives added to the list and developed a plan for addressing all issues in a timely manner. DOI and United States Coast Guard (USCG) personnel participated in the work groups. This collaborative effort yielded remarkable results. The most pressing Mobile Offshore Drilling Unit (MODU) mooring issues were effectively addressed in 6 months with new standards and risk assessment tools. Improved structural, met-ocean data, pipeline, and platform equipment standards followed. Had DOI attempted to develop regulations to address all of these issues, it would have taken several years and accomplished far less.

Following Macondo, DOI chose to identify and address issues by promulgating new regulations rather than working with the companies that conduct the operations and develop the technology and procedures. As a result, progress has been delayed and there is much confusion about where the offshore regulatory program is headed. For example, BSEE was unable to propose new BOP requirements until this spring—5 years after the blowout. This created uncertainty and complicated corporate planning. Industry comments on the BOP Well Control rule are still being developed, but some of the new requirements are less than optimal. Completion of this rule will be a complex and challenging task, and further delays (and the associated uncertainty) are likely. Industry groups and individual companies can effectively address many of the items covered in the proposed rule, and a collaborative effort would have facilitated information sharing, reduced uncertainty, ensured that all safety issues were addressed in an integrated and systematic manner, and accelerated progress. In short, the current prescriptive regulatory model is underwhelming and fails to achieve results in a timely manner.

With regard to specific requirements that increase safety risks, three prominent examples are identified in our comments on the proposed Arctic regulations. We believe the Same Season Relief Well requirement compromises safety by prohibiting or altering safety-critical operations at the end of the drilling season. No risk data were provided to justify this requirement, and there are far more effective means of achieving the objective. BSEE and BOEM underestimate the cost of the proposed rule and the economic analysis put forward significantly and systematically underestimates the potential impact to industry. The Arctic rule also proposes, without any technical justification, to increase the frequency of BOP pressure testing to every 7 days. DOI studies have demonstrated that this increased frequency does not improve BOP reliability. It will, however, unnecessarily expose personnel to safety risks associated with the interruption of operations and the additional handling of pipe and equipment that is necessary to conduct the tests. Finally, the proposed Arctic regulations contain several new proposals that together would have the effect of shifting responsibility for operational decisions away from the rig to company personnel or even agency personnel not working onsite. Onsite personnel have the best understanding and most complete picture of the current operation, key risks and critical considerations. In addition, their experience in active operations provides them with the judgment to make effective real-time decisions within the bounds specified by the Operators governing procedures and operations integrity guidelines. This responsibility includes full control of the operations and the full authority to stop activities at any time.

In summary, we believe DOI's response to Macondo would have been much more effective if the Department had worked collaboratively with industry to identify the issues and ensure they were addressed in the most effective manner. While commu-

nication with BSEE and BOEM has greatly improved, the bureaus are continuing to promulgate prescriptive rules that have unclear objectives and completion schedules, lack justification, have technical deficiencies, and fail to address operations in a systematic manner.

Question 2. How has the division of BOEMRE into two separate agencies enhanced safety? Can the missions of these two agencies coexist in one agency and still ensure the utmost safety in operations?

Answer. There has been no evidence that the division of BOEMRE into two separate agencies has enhanced safety. Yes, BSEE and BOEM could exist in one agency and still ensure the utmost safety in operations. Additionally one agency would ensure coordination, consistency and efficiency between the two agencies and avoid redundancy and duplication.

BOEMRE's predecessor, the Minerals Management Service (MMS), was an effective regulatory agency with highly competent, professional, and dedicated staff. The MMS's combined resource management and regulatory mandates were an organizational strength, not a weakness. While we understand the rationale for moving the minerals revenue functions to a separate office, the division of responsibilities between BSEE and BOEM is confusing and illogical. The announced intent was to establish an offshore leasing and science agency (BOEM) and a single offshore safety and environmental regulator (BSEE). This objective, while understandable, is extremely difficult to achieve given the substantial overlap between the resource management and regulation of operations responsibilities. It was that overlap that led to the consolidation of these function in MMS in 1982.

The potential for conflict and overlap increased greatly when DOI elected, without consultation with industry or other experienced observers of the OCS program, to assign plan approval responsibilities to BOEM. These plans are operational documents that would more appropriately be under the purview of the regulator (BSEE), not the leasing and science bureau (BOEM). BOEM has thus assumed the role of a second OCS regulator within DOI. This contradicts the post-Macondo recommendations by the National Commission and others which called for a consolidation of regulatory responsibilities in a single agency. Concerns about too many offshore regulatory agencies and the associated complexity, overlap, and confusion have thus been further exacerbated.

BOEM is becoming increasingly involved in the regulation of operations by adding conditions to plan approvals. These conditions are the equivalent of regulations without public review and comment. Some items must be submitted to both BOEM and BSEE. Further evidence of the overlap and potential conflict is found in the proposed Arctic Rule which includes contradictory BOEM and BSEE relief well requirements. There also appears to be a general absence of coordination among the DOI bureaus in the development of rules. For example, BOEM's Bonding ANPRM and that Office of Natural Resource Revenue (ONRR) valuation rule, both of which will have significant effects on the economics of deepwater projects, were not developed in consultation with the other bureaus.

We believe that offshore safety and environmental protection would indeed be strengthened and improved by combining BOEM and BSEE in a single bureau. Scientists, engineers, inspectors, and others must work together without the stovepipes inherent in the current organizational framework. In addition to enhancing safety and environmental protection, a combined bureau would have far more cost-effective and efficient. We do endorse the separation of the royalty management functions, and believe that production measurement inspections should be conducted by ONRR, not BSEE. Per its 2014 Annual Report, BSEE is currently conducting more metering inspections than any other type of inspection. This is entirely inconsistent with the objective of separating the revenue and safety functions.

Question 3. Can you provide any examples of rulemakings or regulations, either proposed or final, that have hindered technological innovations in the field of offshore safety?

Answer. Our primary concern, as noted in our response to the first question, is DOI's persistence in attempting to mitigate risks with prescriptive regulations, without necessarily enhancing the safety of operations. Risk management and mitigation is a continuous iterative process, and must be managed in a systematic manner in order to most effectively improve safe operations.

Widespread concerns about counterproductive regulations were included in our comments on the proposed Arctic regulations. Additional concerns will be raised in our comments on the Well Control NPRM. Historically, the most successful elements of the OCS regulatory program have been performance and risk-based, operator-managed, and flexible. For example, Deepwater Water Operations Plans (DWOPs),

the principal regulatory instruments for deepwater production facilities, provide for effective risk management with minimal prescription. The DWOP approach has helped drive the innovation needed to safely produce in record water depths.

In contrast, deepwater drilling has been regulated in a more traditional manner, with prescriptive rules, continuing regulatory direction and approvals, and limited flexibility. In our view, BSEE should manage drilling operations in a more systematic manner, similar to the approach that is taken with the DWOP program. Unfortunately, BSEE's recent Well Control and Arctic NPRMs demonstrate that DOI still thinks safety can be achieved through detailed prescription and regulator direction.

In summary, we believe the DOI regulatory approach could be improved with more goal-setting, less prescription, and improved collaboration to foster a stronger safety culture that promotes innovation.

The CHAIRMAN. Thank you, I appreciate that.

Mr. Williams.

STATEMENT OF CHARLIE WILLIAMS, EXECUTIVE DIRECTOR, CENTER FOR OFFSHORE SAFETY, HOUSTON, TEXAS

Mr. WILLIAMS. Thanks to the committee for this opportunity to talk to you about the Center for Offshore Safety.

Following the Macondo incident in the U.S. Gulf of Mexico there has been renewed focus on promoting the highest level of safety for the offshore oil and gas industry. Based on Macondo studies and regulatory changes, SEMS became a requirement, a regulatory requirement right after Macondo. The focus in the United States has been on both enhancing and developing performance-based safety and environmental management systems, or SEMS.

These are assessed by third-party auditing, to make sure that they are effective, and they are actually delivering what is expected of those kinds of systems. And they also are sustainable learning systems, where the feedback from what has been learned is fed back into how can we make improvements to make these systems even more effective. So, safety is dependent on the technology, it is dependent upon the standards, and it is dependent on how you manage, plan, and execute the projects. And there was a lot of discussion about this earlier today in the committee.

So, why has this focus really been so much on SEMS? And that is the sole mission for Center for Offshore Safety, is how to make SEMS more effective, and how do we learn and feed back into SEMS processes.

The first part, like I said, is that it changes the—it has a focus on embedding safety into how you plan, how you execute, how you implement, how you define hazards, and how do you maintain barriers. It embeds this thinking into your management processes. It also changes to performance-based, which says that companies will—there is a certain basic framework companies will say how they are going to respond to this framework, and then they will be assessed against how effective and how well they are doing what they said, and how effective those safety management systems are that they have embedded. So it really drives accountability also, in a different way.

There also must be—a key part of this is norms and motivations for leadership and decisionmakers to constantly think about safety, and behave in ways that maximize safety.

The Center for Offshore Safety was formed as a collaborative effort in the industry, but it was also part of the Presidential Commission recommendation. It was part of the industry studies looking at what other groups had done that looked at SEMS, and making SEMS effective in other industries. So, we were put together to collect the information, to do the analysis, and to develop good practices to close any gaps or opportunities that we saw.

The COS and the industry members and the industry are committed to improving SEMS performance, and we are doing that in several ways. The first one is people that are members of the Center for Offshore Safety make commitments to certain performance requirements. But the most important thing that we have is a collaboration opportunity, where the industry can get together and share and learn about safety environmental management systems and collaborate.

And also, through the audits and through other performance measures, like safety performance indicators and learning from incident data that we collect, we can learn together. You know, we can find opportunities to improve and continuously improve. So that is one of the main opportunities that we have here.

And since this is a continuous learning process, it is really beneficial; there are companies that have had SEMS for a long time, have been doing really well. There are a few companies that were new to SEMS after the regulation. This process allows all companies, even companies that were running good plans, to learn how to make those good plans even better, and to focus on those improvements.

We have developed a lot of tools that are already in place right now. We have issued our first annual report that I have here that talks about what are the areas we are going to focus on for improvement in the future, based on the data that we have collected. And we have also developed and have in place tools for accrediting third-party auditors and for making sure third-party auditors have the correct training, and the third-party auditors have the correct background to deliver good audits, and deliver the information that we have developed.

So, our focus is and always will be this focus, laser focus, on safety and environmental management systems, what we can learn about them, and how we can make those better for the industry. And certainly our thoughts will always remain with the families and with the people that were lost in the Macondo, but it is a key driver, it pushes us ahead on making the improvements that need to be made in these management systems. Thank you.

[The prepared statement of Mr. Williams follows:]

PREPARED STATEMENT OF C.R. (CHARLIE) WILLIAMS, EXECUTIVE DIRECTOR, CENTER FOR OFFSHORE SAFETY

America's offshore oil and natural gas industry is safer than before, but our goal will always be zero accidents and zero spills.

A significant enhancement in safety and environmental protection in the oil and natural gas industry post-Macondo was the creation and ongoing work of the Center for Offshore Safety (COS). COS was created by the industry for the industry, and is devoted entirely to continually assessing, learning about, and improving the safety and environmental management systems (SEMS) implemented by operators in the OCS.

SEMS has the following benefits:

- Shifts execution and oversight strategy from a prescriptive rule-based approach to one that is proactive and performance-based
- Manages safety with the same principles of planning, organization, implementation, and controls that we expect from other business functions
- Drives both Process and Personal accountability up and down the organizational structure

SEMS requires mechanisms that:

1. Specify what is needed for safe operation
2. Check to see that these specifications are being followed
3. Build competency by developing individual knowledge and skill

COS is entirely focused on Safety and Environmental Management Systems (SEMS) and how their effectiveness can be continually evaluated and enhanced.

SEMS is intended as an active-learning safety and environmental management system that establishes and manages barriers, takes a systematic approach to all parts of offshore safety, has active monitoring via safety performance and other indicators, uses independent verification via third-party auditors, and focuses continually on operationalizing and enhancing safety and environmental management. Most significantly, SEMS focuses on the importance of leadership and the interaction of management with staff to deliver a positive safety culture.

The COS mission is promoting the highest level of safety for offshore operations through effective leadership, communication, teamwork, use of disciplined management systems and independent third-party auditing and certification. Sharing data and lessons learned throughout the industry is an essential part of the work COS does to continually enhance safety.

Through the COS, industry members are committed to improving SEMS performance by subscribing to the following principles:

- Industry leaders demonstrate a visible commitment to safety
- Operators, contractors, and suppliers work together to create a culture of safety
- Decision making at all levels will not compromise safety. Safety processes, equipment, training and technology undergo continual examination and improvement
- Members share learnings and apply industry standards, good practices and promote continual improvement

COS broadly represents the oil and natural gas business on the U.S. Outer Continental Shelf with members from all aspects of the upstream offshore oil and natural gas industry including operators, drilling contractors, equipment manufacturers and service contractors. The COS has a full-time staff that works in conjunction with industry task groups to address specific SEMS issues. In addition, COS has a governing board made up of senior management of the industry member companies.

The COS is responsible for:

- Assuring that third-party Audit Service Providers and their auditors meet the goals, objectives and requirements for conducting SEMS audits
- Compiling and analyzing SEMS data and other safety metrics to find areas for enhancement
- Creating Good Practices to close gaps found through the safety data analysis
- Coordinating COS-sponsored functions designed to facilitate sharing and learning processes regarding SEMS and good practices
- Identifying and promoting opportunities for industry to continually improve SEMS and safety
- Developing outreach programs to facilitate communicating with government and external stakeholders regarding SEMS

COS has developed processes and documents in the following areas:

- COS SEMS Toolkit—SEMS Audit Protocols, Operator-Contractor interface documents, staff Knowledge & Skills worksheets, and other products for SEMS.
- SEMS Audit Service Provider (ASP) Documents, protocols, and guides

- COS Auditor Qualification and Training, SEMS Certification for Operators and Contractors, and ASP Accreditation Documents—Suite of documents that outline the qualification and training requirements for third-party auditors performing COS SEMS audits, COS SEMS certification requirements, accreditation requirements for ASP performing third-party audits and COS Standard Audit Report worksheets and template.
- Skills and Knowledge Management System Guideline (SKMS)—Tools and techniques to provide industry with a common process for the verification and development of employee and contractor skills and knowledge
- Leadership Site Engagement—Good practice guidance for senior managers and leaders to demonstrate visible safety and environmental commitment during visits to offshore operating sites, as well as enhancing accountability and safety culture

COS is actively working in the following areas:

- Audit Service Provider Accreditation—Develop an enhanced set of COS-endorsed standards for accrediting Audit Service Providers and their auditors to support the COS SEMS certification program.
- SEMS Certification Program-Operator Certification—Certification of operator SEMS programs via accredited third-party audit.
- SEMS Certification Program-Contractor Certification—Third-party SEMS Certification of drilling contractors and offshore service/supply companies in order to provide assurance to operators and regulators that a system is in place which meets applicable requirements and demonstrates contractor workers have skills and knowledge to follow safe work practices.
- Safety Performance Indicators (SPI) Program—Clearly defined indicators to evaluate safety performance and aid in identifying safety trends. This includes new leading indicators of SEMS effectiveness.
- Learning from Incidents (LFI) Program—A process and methodology to identify, assess and communicate high value learning incidents to promote cross-industry learning. This includes identifying SEMS elements that were ineffective and contributed to the incident and how the possibility of the incident will be minimized in the future.
- Information and Knowledge Management—An information and knowledge management framework to gather, manage and share information to enable the industry to continually improve SEMS performance.
- COS Safety Events—Plan, develop and coordinate annual COS Safety Forum, Offshore Technology Conference Technical Sessions, SEMS Audit Workshops, and other events to facilitate sharing knowledge and promoting opportunities to continually improve SEMS and safety.

COS has recently published its first Annual Performance Report detailing the initial round of data and lessons learned from the Safety Performance Indicator Program, Learning from Incidents Program and SEMS audits described above. This report is available via the COS Web site.

The oil and natural gas industry is committed to operating in a safe and responsible manner while minimizing our impact on the environment. Protecting the health and safety of our workers, our contractors and our neighbors is a moral imperative and core value of our industry.

No incident is acceptable. Our industry takes every incident seriously. Continued vigilance is essential in helping to prevent future incidents.

In the 5 years since the Macondo incident, the oil and natural gas industry has methodically examined every aspect of offshore safety measures and operations to identify potential improvements in safety management. COS was established by the industry to ensure that this continues and is effective, that there is a single group exclusively focused on SEMS, and that there is a group responsive to supporting a culture of safety.

We worked with the U.S. Department of Interior, the Presidential Oil Spill Commission, other Government Organizations, and industry experts as we developed the mission, programs, and tools of COS.

But COS did not start from scratch. Offshore exploration and production has long been focused on safety and delivering remarkably safe and successful technology and operations. The industry is committed to ensuring that SEMS is continually enhanced and that the COS organization is in place to focus on this and share industry knowledge of SEMS and safety.

Despite industry's history of safety dedication and performance, it was understood that the balance between personnel safety and prevention of major incidents had to be enhanced and the focus on continual SEMS learning, as well as operationalizing those learnings, must be maintained. The oil and natural gas industry has dedicated the past 5 years to using the lessons learned from Macondo to enhance safety and operational practices.

Our strong culture of safety continues to grow along with advances in technology and industry standards. So long as there is any room for improvement, our work at COS will never be complete. This is our livelihood, and our work is critical to America's new energy renaissance.

Every incident is both one too many and a powerful incentive for COS and industry to improve SEMS, the learning process, skills and knowledge, operating procedures and standards, and effectiveness measures and audits. Our thoughts will always remain with the families of all those who lost their lives in this tragic accident. And the industry, and the industry through COS, stands ready to continue to work with government and regulators to improve safety.

The CHAIRMAN. Thank you very much.

Mr. Coatney.

STATEMENT OF DAVID COATNEY, MANAGING DIRECTOR, HWCG LLC, HOUSTON, TEXAS

Mr. COATNEY. Thank you, Chairman Bishop, Ranking Member Grijalva, members of the committee. I appreciate the opportunity to testify before you today. My name is David Coatney, Managing Director of HWCG LLC, a deepwater well containment consortium, formerly called Helix Well Containment Group. I appreciate the opportunity to share with the committee the oil and gas industry's capacity in general, with specific focus on HWCG for quickly and comprehensively responding to a deepwater well blowout for the protection of people, property, and the environment.

First, a little bit about me. I am a fourth-generation family member of southwest Louisiana and I have been working in the oil and gas industry for 40 years. I received my petroleum engineering degree from Louisiana State University in 1977, and commenced working for Marathon Oil Company in the Gulf of Mexico. I have worked in multiple positions, drilling, completions, and production operations, offshore and on, USA and international. I was the offshore installation manager in the North Sea, managed the giant Yates Field in west Texas, and held positions of engineering manager and international production manager.

I provided field development coordination for Rocky Gas development projects during reconstruction, and was Swift Energy's Vice President of Production. Finally, I have been HWCG's Managing Director since early 2011. Throughout my career, a focus on industry and professional standards in the promotion of safe, efficient, and soundly engineered developments has been the baseline.

Five years ago, the deepwater oil industry suffered a loss. Many focused on the released oil. And while the environment costs were significant, we will never forget the loss of those 11 people, and will continue to do all we can to avoid another incident.

While I believe the industry has always been safety conscious, the Macondo tragedy represented a defining challenge that forced all of us to become even more cognizant of safety. Through concerted efforts of the Bureau of Safety and Environmental Enforcement, the U.S. Coast Guard, and consortiums such as

HWCG, we have focused on leveraging the collaborative powers of thousands of man-years of industry experience to set a new bar for response to a deepwater containment event.

Months of the Deepwater Horizon well releasing oil into the Gulf was a hardship on all. It would have been a greater loss if we had stopped deepwater production all together. The industry took an introspective look to improve, and confirmed need for immediate access to certain large-scale equipment, including special purpose equipment called capping stacks. The Deepwater Horizon response success capping the well is a blueprint for HWCG's well containment plan.

HWCG, a consortium of 16 deepwater oil and gas companies, was developed through collaborative efforts of members and industry-servicing entities in close cooperation with the BSEE and the U.S. Coast Guard. The greatest improvement in emergency response since Macondo is maintenance of an integrated comprehensive response solution, trained frequently across the year with members ready for immediate deployment.

There are two containment consortiums in the Gulf, others for international and multiple capping stacks, matching pressure and flow requirements of wells. HWCG's solution is founded on a model anchored on fit for purpose, with collaboration and mutual aid as cornerstones, is based on tried-and-tested equipment proven on Macondo, is supported by frequent meetings of technical experts, contains a detailed well containment plan, and has established response protocols with conformance to NIMS guidelines.

HWCG has over 250 mutual aid subject matter experts available to assist each other during a response. And finally, HWCG's equipment is immediately deployable and technology current through daily use in support of ongoing exploration and development projects. HWCG was tested by the regulators in 2013, through an actual deployment of a capping stack on the seafloor in the Gulf in 5,000 feet of water. Even with a weather hold, it took less than 6 days—a vast improvement, considering the Macondo deployment of nearly 90 days.

HWCG's solution, with capabilities of 130,000 barrels per day, many times Macondo's flows, is a comprehensive well containment response model made up of equipment, people, procedures, and processes.

Thank you for the opportunity to share our story. I would be happy to entertain questions.

[The prepared statement of Mr. Coatney follows:]

PREPARED STATEMENT OF DAVID COATNEY, MANAGING DIRECTOR, HWCG LLC

Thank you Chairman Bishop, Ranking Member Grijalva and members of the committee. I appreciate the opportunity to testify before you today.

My name is David Coatney. I am the Managing Director of HWCG LLC, a deepwater Well Containment Consortium, formerly called Helix Well Containment Group. I appreciate the opportunity to share with the committee, today, the offshore Oil and Gas Industry's capacity, in general, with specific focus on HWCG for quickly and comprehensively responding to a deepwater well blowout in the Gulf of Mexico for the protection of people, property and the environment. But first, a little bit about me . . .

I have been working in the Oil and Gas Industry for 40 years, second generation in that line of work. I received my Petroleum Engineering degree from Louisiana State University in 1977 and commenced working for Marathon Oil Company at that time in the Gulf of Mexico operations. I've worked in multi-disciplinary capac-

ities including drilling and completions and production operations—offshore and onshore, USA and international. I was the Offshore Installation Manager (OIM as you oftentimes hear it) in the North Sea operations; managed the giant Yates Field in west Texas; and held positions of Engineering Manager and International Production Manager. Since retiring from Marathon in 2003, I've provided field development coordination for the USA-awarded Bechtel Iraqi gas development projects during reconstruction and was independent producer Swift Energy's VP-Production. Finally, I have been HWCG's Managing Director since its organization in early 2011.

Throughout my career, focus on Industry and professional standards in the promotion of safe, efficient and soundly engineered developments has been the baseline.

Five years ago the deepwater oil industry suffered a loss. Many focused on the released oil and while the environmental costs were significant, we will never forget the loss of those 11 people and will continue to do all we can to avoid another incident.

While I believe the industry has always been safety conscious, the Macondo tragedy represented a defining challenge that forced all of us to become even more cognizant of safety. Through concerted efforts of the Bureau of Safety and Environmental Enforcement (BSEE); the U.S. Coast Guard (USCG) and consortiums such as HWCG LLC, we have focused on leveraging the collaborative powers of thousands of man-years of Industry experience to set a new bar for response to a deepwater containment event.

The months of the Deepwater Horizon well releasing oil into the Gulf of Mexico was a hardship on all. It would have been a greater loss if we had stopped deepwater production altogether. The industry took an introspective look to improve itself and confirmed the need for immediate access to certain large scale equipment, including special purpose subsea blowout preventer equipment called capping stacks, as well as, dedicated surface flowback equipment. The Deepwater Horizon response success in capping the well is a blueprint for HWCG's well containment plan.

HWCG LLC is a consortium, comprised of 16 deepwater oil and gas companies, that was developed through collaborative efforts of its members and over 34 Industry servicing entities in close cooperation with the BSEE and USCG. This yielded an integrated response solution capable of capping of a deepwater well in less than 7 days.

The greatest improvement in emergency response since Macondo is maintenance of an integrated and comprehensive response solution, drilled frequently across the year with its members, and ready for immediate deployment. Today there are two containment consortiums for activities in the Gulf; others for international operations and multiple capping stacks matching pressure and flow requirements of wells. HWCG's response solution is founded on a model which: (i) is anchored on a "fit-for-purpose" concept with collaboration and mutual aid as cornerstones; (ii) is based on the utilization of tried and tested equipment proven on the Macondo event; (iii) is supported by frequent meetings of technical experts; (iv) contains a detailed Well Containment Plan; and (v) has established emergency response protocols with baseline conformance to NIMS guidelines. HWCG has a members' database of over 250 mutual aid subject matter experts available to assist each other during a response. And . . . finally, HWCG's equipment is maintained "immediately deployable" and "technology current" through its daily use in support of ongoing exploration and development projects—the final key to the HWCG program.

HWCG Consortium was tested by the regulators in 2013 through one of our members, Noble Energy, through an actual deployment of capping stack to a location on the seafloor of the Gulf in 5,000 ft. of water. The deployment, even with a weather hold, took less than 6 days—a vast improvement considering a Macondo-deployment of nearly 90 days.

HWCG's Response Solution with capabilities of 130,000 BPD, many times the requirements of Macondo flows . . . A comprehensive well containment response model—made up of equipment, people, procedures and processes—Ready to be activated immediately in the event of a deepwater well control incident . . .

Thank you for the opportunity to share our story. I would be happy to entertain any questions.

The CHAIRMAN. Thank you, I appreciate that.

Mr. Murawski.

STATEMENT OF STEVEN MURAWSKI, PROFESSOR AND PETER BETZER ENDOWED CHAIR OF BIOLOGICAL OCEANOGRAPHY, UNIVERSITY OF SOUTH FLORIDA, TAMPA, FLORIDA

Dr. MURAWSKI. Chairman Bishop, Ranking Member Grijalva, and the committee members, thank you for the opportunity to provide testimony today. My name is Steven Murawski, and I am an environmental scientist at the University of South Florida in St. Petersburg. Today I appear before you to summarize some of the environmental consequences of the Deepwater Horizon accident, and propose some steps to address the ongoing challenges we face in ensuring safer marine hydrocarbon production.

The Deepwater Horizon event was both unprecedented and unanticipated. Up until the accident, oil spills were thought of as two-dimensional events: oil spilled instantaneously over a two-dimensional grid. Deepwater Horizon event was a four-dimensional spill, leaking almost 5 million barrels of crude over an 87-day period, a mile deep in the ocean. It, therefore, presented many unique challenges which required inventing new techniques, some on the spot, to cope with the new challenges arising from that spill.

In the 5 years since the spill, we have gathered an enormous amount of information on environmental effects, the efficacy of measures used to fight the spill, and have learned a number of important lessons that need to be put into use in fighting the next deep spill.

Five years ago, a well a mile deep was a novelty. Now the industry is drilling in 2 miles of water depth, and even deeper. Should a blowout occur in 2 miles of water depth, many of the conditions encountered during the Deepwater Horizon would be fundamentally different, resulting in yet a different spill scenario. For example, hydrate formation conditions will be altered and more critical when determining the utility of containment technology and the rise rate of droplets. These differences need to be carefully considered, before or if the Deepwater Horizon playbook is used once again.

With respect to the environmental consequences of Deepwater Horizon, a number of important impacts have emerged from the work of NERDA and independent scientists. For example, oil and gas from the ruptured well created dense clouds of fine, neutrally buoyant droplets that never surfaced. The key and yet unresolved aspect of this problem is the role, if any, that the addition of dispersants injected at the well head played in keeping that oil volume from surfacing. This is a fundamental problem of enormous practical importance that can only be answered through high-pressure experimentation and modeling.

The combination of oil, gas, dispersants, dead plankton, and fine clay from river inputs conspired to form a dirty blizzard comprising between 4 and 10 percent of the Deepwater Horizon oil volume, which coats the bottom of the Gulf in a 1,000-square-mile area today.

Monitoring the fish populations on the Continental Shelf since the spill has revealed a number of important effects. Declines in growth of red snapper and other reef fish have been accompanied by coincident declines in recruitment of red snapper in the Eastern Gulf, which has important implications for fisheries rebuilding.

A host of other environmental issues have emerged from monitoring the various components of the ecosystem, including the deaths of hundreds of thousands of shore birds, severe health issues with bottlenose dolphins, impacts on marsh flora and fauna, and impacts on deep biota, including cold-water corrals and other invertebrates. The Exxon Valdez experience shows us that it can take a half-decade or more for ecological change to become apparent. Therefore, continued vigilance is warranted.

What do we need to note in the advent of another large, deep spill? We need better baseline contamination information for sediments, water, and biota associated with the approximately 4,000 oil and gas facilities in the Gulf. Oil spill planners need to understand what resources are at risk from a potential spill at any location in the Gulf, and how surface and subsurface oil spills move, at what rates, and in response to what factors. These and other issues should be viewed as critical known unknowns in the oil spill response, and finding their answers should be a priority.

How can we close the critical knowledge gaps that we have? I will highlight three recommendations I have in my written testimony.

First, literally every environmental scientist I know that has worked in the Gulf has lamented the lack of comprehensive pre-spill environmental baselines, making the job of assessing oil spill effects needlessly complicated and expensive. Congress and/or the Administration could stipulate that all existing and planned oil and gas production facilities be monitored for such baseline data.

As well, we need to invest in independent science through the existing environmental baseline studies and oil spill preparedness. I recommend that you consider significant increases in funding for the environmental studies program at BOEM, as well as funding research recommendations of ICCOPR.

In summary, increased government oversight, better equipment, higher regulatory standards, et cetera, are important, but they are not the only factors that are critical here. As we remember the legacy of Deepwater Horizon, we should redouble our efforts to anticipate, prepare, and train for the next disaster.

Thank you very much, and I appreciate any questions you might ask me.

[The prepared statement of Dr. Murawski follows:]

PREPARED STATEMENT OF STEVEN A. MURAWSKI, PH.D., PETER R. BETZER ENDOWED CHAIR OF BIOLOGICAL OCEANOGRAPHY, UNIVERSITY OF SOUTH FLORIDA

Chairman Bishop, Ranking Member Grijalva, and committee members, thank you for the opportunity to again provide testimony to this committee on issues important to management of the Nation's natural resources. Today I appear before you to summarize some of the environmental consequences and propose some steps to be taken to address the ongoing challenges we face resulting from the Deepwater Horizon oil spill, and in enabling safer drilling in the future.

My perspectives in providing this testimony are two-fold. During the Deepwater Horizon (DWH) oil spill I served as a senior science advisor to the Under Secretary for Oceans and Atmosphere at the Commerce Department for issues related to the oil spill. I did so from my position as the Director of Scientific Programs and Chief Science Advisor at the National Marine Fisheries Service. I saw firsthand the difficulties in responding to the unprecedented volume of oil released continuously over an 87-day period in the deep, cold recesses of the Gulf of Mexico.

Subsequent to the spill, I retired after 34 years of service from NOAA to become a Professor of Biological Oceanography at the University of South Florida, in

St. Petersburg, Florida. In my current capacity I direct a large, multifaceted and multi-institutional research program concerned with understanding oil spill impacts and increasing preparedness to deal with deep spills of the future. The work of my colleagues and me is funded through a grant from the Gulf of Mexico Research Initiative (GoMRI), which was in-turn funded via $500 million from BP in the early days following the spill. The goals of our Center for Integrated Modeling and Analysis of Gulf Ecosystems (C-IMAGE; http://www.marine.usf.edu/c-image/) are to address fundamental questions of science with respect to response procedures and to help understand the long-term consequences to natural resources and people of toxic components of oil in environment.

An Unanticipated and Unprecedented Spill

"We are fighting an omnidirectional, almost indeterminate threat here. We are trying to protect the entire Gulf Coast at the same time."

Coast Guard Commandant Thad Allen, May 18, 2010 before the Senate Committee on Commerce, Science, and Transportation.

In the years prior to the Deepwater Horizon incident, the offshore oil and gas industry had progressively migrated offshore into the deeper parts of the Gulf of Mexico, and elsewhere around the world, as easier to obtain formations were explored and subsequently played-out. The advent of "ultra-deep" drilling (>5,000 feet water depth) has accounted for an increasing and now significant portion of production in the last decade, despite the relatively high costs of production there. While Deepwater Horizon was located in over a mile of water depth, it is by no means the deepest well drilled in the Gulf. As the quote above from former USCG Commandant Admiral Thad Allen (cited in Lubchenco et al. 2012) indicates, despite the practice of drilling in such extreme depths, the industry and government regulators were unprepared for the advent of a massive spill occurring at the water-geological interface. Even now there is considerable dispute as to the specific conditions that conspired to cause the accident, the efficacy of response measures—many of which were essentially made up on the spot—and the full set of environmental effects of DWH.

In the intervening years since the spill, government regulators and the industry have become more safety conscious regarding deep drilling, as attested to by the witnesses in today's hearing. However, as with the Deepwater Horizon incident, we must ask the question—are we preparing for the circumstances for the *last* spill or anticipating the conditions that will occur during the next major spill? Remember that 5 years ago a mile deep well was a novelty, now the industry is drilling in 2 miles water depth and even deeper.

The volume of oil and gas released during Deepwater Horizon into the environment and the conditions under which that release happened by were unprecedented at the time. Although deep blowouts and their characteristics were previously and presciently considered (Ross 1997; NRC 2003), practical spill response measures for such a unique scenario, such as sub-surface containment, dispersant use in the deep sea, and prediction of fate and effects, were not brought into operational spill response planning prior to DWH (McNutt et al. 2012; Lubchenco et al. 2012).

Should a deep blowout occur at 2 miles water depth, many of the conditions extant during the DWH spill will be fundamentally different, resulting in yet a different spill scenario. Hydrate formation conditions will be altered and more critical in determining the utility of containment technology and the rise rate of oil droplets. Different gas/oil ratios (GORs) will result in altered turbulent mixing of multi-phase jets of oil, gas and water. As well, the "family" of oil composition will likely differ resulting in a heavier/lighter or sweeter/more sour crude being released. All of these differences need to be carefully be considered as to impacts and efficacy before, or if, the Deepwater Horizon "play book" is used once again.

What People Ask Scientists in the Gulf about DWH

In order to design a hydrocarbon extraction policy that is safer for the workers and the environment, it is contingent on us to carefully assess the risks of accidents of various types and volumes. Risk is a combination of the probability of a particular accident or phenomenon happening and the significance of the consequences should that particular event occur. In the case of DWH, the frequency of a deep spill may be low (as compared to accidental low level releases associated with surface operations), but the sheer volume and extent of the spill may have consequences that last for decades or that result in threshold-level changes to the ecosystem that are unrecoverable. Understanding the totality of these risks requires that we evaluate spill effects from many perspectives. State and Federal regulators, representatives of various use sectors and the public all consider the spill from a variety of different

lenses. Gulf scientists are often asked about many aspects of the spill that reflect these multiple perspectives of risk. The questions that most often recur include:

- Where is the oil now? When will it be gone?
- How toxic is (was) the oil?
- What about dispersants?
- Is the seafood safe to eat?
- What are the short- and long-term impacts on biota (marshes, fish, birds, marine mammals)?
- What will be the human health impacts, and on human use of natural resources?
- Are we (as a society) better prepared now to respond to a spill of the magnitude of DWH?
- Is such a spill less likely to occur now than it (apparently) was in 2005?

Designing an acceptable oil spill risk policy for the Nation requires that we understand better the answers to these and other questions so that we can improve the system to minimize the frequency and mitigate the impacts of future spills along these and other dimensions. Improvements to the current system for risk reduction have real costs to the industry and society, and balancing those costs with the goal of minimizing the risk to levels well below those that existed in 2005 should be our ultimate goal. In order to do so, we need more and better science to address the trade-offs of risk to cost. Thus, in the wake of the DWH incident it is critical that we carefully evaluate the questions above, and others, as we plan for the next disaster response and build more risk aversion into the current regulatory system

What Do We Know Now That We Did Not Know Then?

Because of the generous funding of organizations such as GoMRI, the National Science Foundation, various state and Federal agencies, and other sources, we now have partial answers so some of the key questions vexing responders during the DWH spill. For example, we now know the following:

- Oil and gas from ruptured well will create dense clouds of fine, almost neutrally buoyant plumes in 900–1,200 meters of water and never surface—even without the addition of chemical dispersants. The key—and yet unresolved—aspect of this problem is the role, if any, the addition of dispersants injected at the well head played in keeping oil volume from surfacing. This is a fundamental problem of enormous practical importance that can only be answered through carefully controlled high pressure experimentation and modeling (e.g., Paris et al. 2014). These studies are ongoing (funded by API, GoMRI, BSEE, and others) but have yet to be concluded and independently peer reviewed.
- Oil does not, in all circumstances, float, and large quantities of the DWH oil remain trapped in sediments of the deep Gulf. The oil took many paths; some sank, some floated to shore, and other quantities were consumed by bacteria while in the water column. Estimates of oil in the deep ocean sediments range from 4–30 percent of the volume exiting the well. Additional DWH oil can be found near beaches in the form of tar patties and tar balls, and in some of the coastal marsh habitats.
- A combination of oil, dispersants, dead plankton and fine clay from river inputs conspired to form a "dirty blizzard" which coats the bottom of the Gulf in a >1,000 square mile area (Valentine et al. 2014; Schwing et al. 2015), and which also occurs in the deep waters off Mexico following the IXTOC–I blowout in 1979–1980.
- High resolution satellite and aircraft imagery and airborne sampling can be used both to track surface oil and to measure its thickness and therefore quantity, as well as the chemical composition of oil.
- The composition of oil residues in fishes can closely resemble that of the crude oil that taints them (Murawski et al. 2014).
- Different species can exhibit vastly different contamination levels, even if taken in the same location, due to differences in contamination vector and physiology.
- Due to a combination of aggressive fishery closures and intensive seafood inspections (Ylitalo et al. 2012) no tainted seafood apparently reached the market following DWH.

The over 400 scientific papers published in the wake of the DWH disaster have done much to close the knowledge gap, and the lessons from these studies need to be folded into disaster response strategies. Impressive as the pace of scientific understanding of spill dynamics has been in the past 5 years, there remain a number of key scientific uncertainties that are critical to resolve prior to the next deep spill:

What Do We Need To Know (That We Do Not Know Now)?

- What are the baselines of contamination in sediments, water and biota associated with the ~4,000 oil and gas facilities in the Gulf (and pipeline fields as well)?
- How do the depth of the water and specific oil composition affect the efficacy of response measures?
- What resources are at risk from a potential oil spill at any location in the Gulf?
- How would surface and sub-surface oil spills move, at what rates, and in response to what factors?
- What are the environmental consequences of oil spill response measures (burning, dispersants, sand berms, water releases)?
- Will deep plumes form without the addition of any dispersants at all? What value is added by the use of deep dispersants (if any), what is their environmental consequence?
- Can ultra-deep drilling and production be accomplished with greatly reduced risks of environmental damage?

Resolving these and other issues should be viewed as critical "known unknowns" in oil spill response. Below I focus on a few approaches that Congress and the Administration could collaborate on in addressing them.

Steps We Can Take to be Better Prepared for Future Spills

(1) Address the Lack of Adequate Environmental Baselines:

Currently there are literally hundreds of environmental scientists, students and citizens conducting studies to determine the impacts of the DWH spill on the environment and biota of various types. These studies are used both to assess penalties in the litigation phase of the accident, but also to understand the spill's implications for public safety and long-term environmental sustainability in the Gulf. We can discover much about these impacts by evaluating contaminants locked in the sedimentary record before, during, and after the spill (Stanschi et al. 2001; Schwing et al. 2015), monitoring the recovery process (Murawski et al. 2014) and by comparing resources in the spill zone to control areas far from the spill. However, literally every environmental scientists that I have spoken with has lamented the lack of comprehensive pre-spill environmental baselines as making the job of assessing DWH effects needlessly complicated and expensive. For example, one of the only baseline studies of hydrocarbon residues in sediments, water and fish comes from a study (funded by MMS) conducted in the early 1990s, over 300 miles west of the DWH accident (McDonald et al. 1996). Had the record of PAH contamination of the environment surrounding DWH been periodically monitored, the process of disentangling DWH effects from background contamination would be much more straightforward than it is today.

Maintaining adequate baseline studies and periodically assessing changes due to energy exploration and development activities is clearly within the purview of DOI/BOEM, as specified in the Outer Continental Shelf Lands Act (OCS) of 1973:

> *"The Environmental Studies Program [1] now managed by BOEM was first established in 1973 by the OCS Lands Act, which directed the Secretary of the Interior to—*
>
> - *Establish information needed for the assessment and management of impacts on the human, marine, and coastal environments of the OCS and potentially affected coastal areas.*

[1] This section quoted directly from: 2015. BUDGET JUSTIFICATIONS and performance information for 2016, The U.S. Department of the Interior, BUREAU OF OCEAN ENERGY MANAGEMENT: http://www.doi.gov/budget/appropriations/2016/upload/FY2016_BOEM_Greenbook.pdf.

- *Predict impacts on marine organisms resulting from a variety of factors: chronic low level pollution or large spills associated with OCS production; discharge of drilling muds and cuttings, as well as pipeline emplacement; and onshore development.*
- *Monitor human, marine, and coastal environments to provide time-series and data trend information for identification of significant changes in the quality and productivity of these environments."*

Clearly, despite these stated mission goals for DOI, gathering the "*information needed for the assessment and management of impacts on the human, marine, and coastal environments of the OCS . . .*" is a priority not currently being met. Given the continuing development of ever deeper petroleum reservoirs in the Gulf of Mexico, as well as the schedule for expanded leasing activities along the Atlantic Seaboard and off Alaska, there is an increasing need for these environmental baselines and associated studies. The budget for BOEM and BSEE within the Department of the Interior have been stagnant for years and are inadequate to meet existing and new responsibilities of these agencies.

One way to assure adequate baseline data are obtained is to require such data be collected periodically. Congress and the Administration could stipulate that:

> *The Department of the Interior shall require (at the expense of the operator) that all existing and planned marine oil and gas production facilities be monitored at no more than 5-year intervals to provide baseline and ongoing contamination assessments of sediments, the water column, and marine life (e.g., invertebrate and fishes) in the vicinity of these facilities. The Department shall develop scientific protocols for such activities and make the data publicly available on a continuing basis.*

Such a requirement not only would make assessing the impacts of any new spill much more direct, but would potentially help the industry demonstrate the facts about environmental pollution associated with its routine operations and if a company was responsible for environmental damage from an accident. For example, in the case of the Hercules #265 gas rig explosion in July, 2013 off the Louisiana coast, baseline information on fish contamination was available for the vicinity from post-DWH studies. Sampling in the aftermath of the Hercules event showed no increase over the baselines in the concentration of low molecular weight polycyclic aromatic hydrocarbon (PAH) metabolites in red snapper bile, although high molecular weight PAHs, resulting from burning hydrocarbons, did increase.

There is ample precedent for industries such as oil and gas to pay for routine monitoring of the environmental consequences of their operation, under the supervision of Federal agencies. For example, under the Clean Water Act, permittees are required to monitor, at their expense, wastewater discharges into public waterways, including the ocean. Similarly, some fisheries, regulated under the Magnuson Stevens Fishery Conservation and Management Act pay for 100 percent observer coverage to assure compliance with catch quotas and bycatch limits (e.g., the Bering Sea groundfish trawl fleet). I believe that similar routine and infrequent monitoring of the environments surrounding oil and gas facilities is both consistent with provisions of the Outer Continental Shelf Lands Act, and is cost effective.

(2) Invest in Independent Science through Environmental Studies and Oil Spill Preparedness Programs

The Bureau of Ocean Energy Management (BOEM, representing parts of the former Minerals Management Service), maintains its Environmental Studies Program (ESP) to conduct research and provide critical information on a wide variety of subjects ranging from the impacts of seismic exploration on marine mammals, deep coral and chemosynthetic community mapping, alternative energy development, archeological relic preservation and contamination studies. The spatial domain of study has increased to include the Arctic and, with impending lease sales in the Atlantic, to that region as well. The budget to cover the wide scope of issues and increasing spatial domain of development is only about $35 million per year—far too little to make effective progress and support national policy initiatives. I recommend that Congress and the Administration consider a significant and commensurate increase in the Environmental Studies Program budget at BOEM.

(3) Invest in Interagency Oil Spill Research

One of the important, but often overlooked, lessons of DWH is the key roles that coordinated actions among the relevant Federal agencies play in addressing the "omnidirectional" threats resulting from massive and unique oil spills (Lubchenco et al. 2012; McNutt et al. 2012). Congress anticipated the importance of the synergy

among agencies in writing OPA–90 by establishing the Interagency Coordinating Committee on Oil Pollution Research (ICCOPR). Housed within the U.S. Coast Guard, ICCOPR has membership including all agencies dealing with aspects of oil spill response. However, while OPA was authorized in 1990, there has been no recent funding directed to ICCOPR to address the long list of interagency research priorities identified by that group. Other that some Federal funding spent under very restrictive stipulations of the Oil Spill Trust Fund, there is no funding to coordinate disaster response strategies among agencies, and to close critical research gaps identified by them. I recommend that Congress and the Administration collaborate on funding directed specifically to address the research priorities identified by ICCOPR.

This research potentially bears not only on the response measures to a spill but can help identify (through resource mapping studies combined with four-dimensional hydrodynamic modeling) drilling locations that may present an inordinate risk should a large accidental spill occur. In this case, regulators may deem drilling in these locations unacceptable. While these and other research projects are clearly worthy of priority they remain essentially unfunded.

(4) Increase Transparency and Collaboration among Industry, Government and Academic Scientists

"The worst time to be exchanging business cards is during a crisis".

Quoted by Dr. Marcia McNutt, former Director of the U.S. Geological Survey and current editor, Science Magazine (McNutt 2015).

In responding to the unprecedented nature of the DWH spill, a number of ad hoc committees were formed to help answer thorny technical problems, devise new solutions and to review data and analyses to be made public. While initially made up of government and industry scientists, all of these committees eventually entrained independent academic scientists. This is because the expertise necessary to solve the problems resided outside pre-arranged communication channels, and because the scale and scope demanded high levels of transparency in decisionmaking and in the conclusions being reached. The inclusion of academic scientists was not without controversy or problems, but on balance better decisions were ultimately made because of it (McNutt et al. 2012; Lubchenco et al. 2012; McNutt 2015). Problems in using independent scientists in this role were exacerbated by the lack of organization of the large, diverse community with specialized expertise, and the unprecedented nature of the interagency working groups as established. Since the DWH spill the academic community in the Gulf has formed the Gulf of Mexico University Research Collaborative (http://gomurc.usf.edu/) with the goal of establishing a clearing house to rapidly identify pertinent expertise in the event of a large-scale spill. As well, the U.S. Coast Guard has formed partnerships with the academic community, including establishing new memoranda of understanding to enhance such collaborations.

A number of key scientists and policy advisors, both within and outside agencies, have also been working to better define the roles and advantages of enhanced collaborations among responders and academic scientists through the Science Partnerships Enabling Rapid Response project at the Center for Ocean Solutions,[2] at Stanford University. Rather than being seen as antagonistic, such collaborations among industry, government and academia are a positive development and such collaborations should therefore be nurtured and supported.

(5) Re-Authorize OPA–90

It has been nearly 25 years since the Oil Pollution Act of 1990 was passed by Congress and signed into law. The industry has evolved considerably, and drilling and production have become much more complex, especially with the advent of ultra-deep drilling. While the current law is a vast improvement over what existed when the Exxon Valdez spill occurred, like most legislation, it needs to be updated and expanded as circumstances have changed. A vigorous, open and collaborative debate on provisions of a re-authorized law can carefully consider provisions to reduce or eliminate inordinate risks in hydrocarbon production while carefully considering the costs of various proposals to the industry and the public. As an example, the process of such an open and transparent debate preceded the 2007 reauthorization of the Federal Magnuson Stevens Fishery Conservation and Management Act, resulting in near unanimous passage of landmark legislation that sets the global standard for fishery conservation and sustainability. We should have no less comprehensive model legislation regulating oil pollution for the United States. I will not

[2] www.centerforoceansolutions.org/project-science-partnerships-enabling-rapid-response.

discuss specific proposals for new provisions of a reauthorized OPA but suggest the process of considering reauthorization will result in a thorough debate on the merits of various regulatory approaches.

(6) Improve International Aspects of Oil Spill Preparedness and Response

As the oil and gas industry in the Gulf expands to ever deeper waters of the Gulf it has edged closer to the boundaries of the U.S. Exclusive Economic Zones (EEZ) with Mexico and Cuba. Likewise, the Mexican state oil company PEMEX has initiated ultra-deep drilling near the U.S. EEZ, and Cuba has been conducting exploratory drilling in its waters. A large spill near the boundaries of EEZs in the Gulf will likely affect all. The next deep spill in the Gulf will thus likely have a more international component to both oil spill effects (distribution across international boundaries) and in coordinated oil spill response. To their credit, the U.S. Coast Guard, NOAA, BSEE, EPA and the U.S. State Department have been reaching out to these nations to coordinate response activities in the advent of a spill impacting multiple jurisdictions. More needs to be done, however, in harmonizing safety standards, collaborating on international response, joint cleanup and training and exercises and in setting of mutually beneficial extraction policies. The international aspects will be evident as well in the Arctic as exploration and production activities are expanded there as well. There is much to be gained from more direct engagement on such international collaborations, and Congress and the Administration can set the tone for positive engagement with international partners.

Summary

Increased government oversight, better equipment, higher regulatory standards determining when and how to drill, and heightened awareness on the part of the industry are important factors in assuring that deep drilling becomes safer for workers, the public and for the environment. However, while these steps are necessary they are not, in and of themselves, sufficient to reduce risk of harmful spills to a negligible degree, as was the operating assumption prior to Deepwater Horizon. The marine environment is a publicly-owned resource. All operations conducted on public lands need to be carefully monitored, in an open and transparent way, to assure the public that oil and gas operations do not harm the asset value of the full portfolio of ecosystem goods and services (Ocean Studies Board 2013) owned by all of us. Likewise, in the advent of another deep oil spill, measures used by the industry to clean the environment and mitigate damage should not compound the toxic effects of the spill itself. More research on innovative methods to interdict spills and clean them up are urgently required. As we remember the legacy of DWH we should redouble our efforts to anticipate, prepare and train for the next disaster. The events earlier this month when workers were killed and injured aboard a Mexican production platform in the Gulf of Mexico should remind us of the dangers of complacency. Guarding against such complacency by doing more to make ocean drilling safer for people and the environment honors the legacies of the 11 workers killed as a result of the Deepwater Horizon disaster.

Thank you for your attention, and I will answer your questions to the best of my ability.

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The CHAIRMAN. Thank you. I appreciate the testimony from all four of you.

Mr. Newhouse, you didn't have a chance to ask the Director a question. Do you want to start us off with the questions this round?

Mr. NEWHOUSE. Well, I appreciate that, Mr. Chairman. Thank you very much.

After listening to the testimony that I was able to hear today—first of all, appreciate you guys being with us this morning—I certainly would not agree that this is just a pat-on-the-back hearing, but I think it is a very important session that we are having this morning. I appreciate that this is a necessary look at where we are today, how we could advance needed energy production, while at the same time being as certain as possible to have requirements in place so that industry meets and follows safety requirements for personnel, as well as the environment.

So, along those lines, just a couple of questions, if I may. And certainly this could be for anyone, but I was thinking perhaps Ms. Hopkins and Mr. Coatney first.

First of all, there are timelines involved throughout the offshore energy process, from leasing, to exploration, to drilling, production, and more. But in the last couple of years, the industry has had to adhere to an ever-growing number of regulations meant to help ensure that production is conducted in the most safe and environmentally responsible manner possible, a goal that, clearly, everyone shares.

Industry, for its part, needs to be certain that it is feasible to meet all the regulatory deadlines before embarking on something

as capital-intensive as offshore production. Without that certainty, it seems the industry will decrease operations in the long run, which would hurt production and have a negative impact on America's energy security.

Do you think the timelines contained throughout the statutes still give industry enough time to do its job, even in view of the ever-growing number of boxes that need to be checked before operations can happen?

Ms. HOPKINS. So thank you. Yes, I believe that what is important is that the industry has a consistent, predictable, reliable regulatory framework under which to act and to explore for and develop energy and natural resources, oil and gas.

Mr. COATNEY. Thank you, Representative. From HWCG's perspective, in well containment—well containment being certainly a new advent since 2010—the NTLs, as they exist, and the opportunity to build the containment consortiums to be able to meet those, is very workable. And we are able to continue to develop the necessary components to have an effective and comprehensive response to any containment event.

Mr. NEWHOUSE. Thank you very much. Mr. Williams and perhaps Ms. Hopkins as well, the Department has just proposed a well control rule that would incorporate the latest industry standards for blowout preventers and to Federal regulation. It seems the Federal Government has recognized industry has made some serious changes since the incident in 2010.

Can you talk a little bit about what some of those changes are that will be included in the new rules, and how they have made systems safer?

Ms. HOPKINS. Certainly. So, one we spoke about, it is in my written testimony, as well, is API updated our BOP standard in 2012 to prioritize consistent procedures, preventative maintenance, inspection, and testing. And BSEE does, in the proposed rule, incorporate, or proposes to incorporate, Standard 53 in its entirety into the regulations. That is one example.

In addition, there are, I believe it is approximately 11 other, or 10 other, documents that are incorporated by reference by BSEE, many of those related to our BOP equipment specifications. So, yes, we have updated and revised many of our documents and created new documents since the incident.

Mr. NEWHOUSE. Thank you.

Mr. WILLIAMS. So I would like to also mention one section in there is on SEMS, safety and environmental management systems, relative specifically to the blowout preventers. And, as I talked about, SEMS talks about how if you planned, how if you established barriers, what is your plan for maintaining those barriers to keep them in place and assuring that they exist. So it talks about actually adding—looking at SEMS specifically on the blowout preventers, and the long-term plan for how you maintain the barrier.

Mr. NEWHOUSE. Thank you very much. Thank you, Mr. Chairman. Appreciate the opportunity.

The CHAIRMAN. Thank you. Appreciate that.

Mr. Grijalva.

Mr. GRIJALVA. Thank you very much. And if I may, Mr. Williams, what percentage of the industry belongs to your organization?

Mr. WILLIAMS. So, we are a membership organization, but we have open participation. So when we do our task group work on our different——

Mr. GRIJALVA. If you were to give me a percentage, what would it be?

Mr. WILLIAMS. Well, there are 13 operators, and there are roughly 86 operators that did SEMS audits.

Mr. GRIJALVA. It is my understanding that maybe 55 percent of those operating companies covering 55 percent of the Gulf leases are members, which is part of the point of discussion today.

Did the company that caused the explosion, are they a member of your organization?

Mr. WILLIAMS. BP? Yes.

Mr. GRIJALVA. OK.

Mr. WILLIAMS. Oh, Hercules?

Mr. GRIJALVA. Yes, Hercules.

Mr. WILLIAMS. No, they are not.

Mr. GRIJALVA. And let me follow up with one other question.

Mr. Williams, you, in your testimony, and this is just because Ms. Hopkins talked about predictability, in terms of regulations. You mentioned in your testimony that the Center for Offshore Safety certified SEMS programs for drilling contractors, as well. Currently, SEMS regulations do not apply to contractors. But, given your certification program, do you believe it would be appropriate for BSEE to extend SEMS regulation to those contractors, as well, and make it part of the package?

Mr. WILLIAMS. So, we have both contractors and drilling contractors that are members. And, being a member, you are committed to doing a SEMS audit, even if it is not a regulatory requirement. And we have already had one drilling contractor voluntarily do this and become certified. So the path that we are on is having the contractors voluntarily do that and become certified.

Now, the regulation currently requires the operators assure that the contractors have the adequate plans in place. But I do believe that contractors need to voluntarily do this, and they are.

Mr. GRIJALVA. So it shouldn't be a requirement on the part of the agency.

Mr. WILLIAMS. I think if it is done voluntarily, and you use third-party auditors, and it is certified through a sound process, that that is good.

Mr. GRIJALVA. I was just pointing to uniformity and predictability. That is why I asked the question.

Ms. Hopkins, the former commissioners of the President's Oil Spill Commission, that commission on the Deepwater Horizon have stated repeatedly they believe that the Center for Offshore Safety needs to be fully independent, a fully independent organization. But it is still part, as I understand it, of the American Petroleum Institute. Are there any plans to make the Center independent, that was recommended by the Commission?

Ms. HOPKINS. So the Center for Offshore Safety was developed by the industry for the industry, with the purpose of adopting

standards of excellence to ensure continuous improvement and safety in offshore operational integrity. This purpose is being effectively carried out by the COS in its current state. This is self-evident in the tremendous progress and success of the COS——

Mr. GRIJALVA. Should it be independent or not, if I may, because I am running out of time, and I need to interrupt you. Do you feel it should be an independent agency, separate from the Institute?

Ms. HOPKINS. As I said, the COS is currently carrying out its mission in an effective manner.

Mr. GRIJALVA. So it doesn't need to be.

Ms. HOPKINS. It is currently working as intended.

Mr. GRIJALVA. I would take that as no, it doesn't need to be.

The last question, Ms. Hopkins, is to what extent does the institute use independent science? By that I mean science that the industry isn't funding itself, science that would help determine the impacts from oil spill response methods, particularly the use of dispersants on the scale that we saw during the Deepwater Horizon response.

Any comment or thought on the point and the question I just asked?

Ms. HOPKINS. So I might need clarification on your question, but I believe you are asking if API and the industry does do research in these areas.

Mr. GRIJALVA. Independent, having independent science make the analysis and make the studies. I was thinking in particular of dispersants that were used throughout the Deepwater Horizon cleanup.

Ms. HOPKINS. OK. It——

Mr. GRIJALVA. Has any thought—any thought, in terms of the Institute, utilizing——

Ms. HOPKINS. Yes——

Mr. GRIJALVA [continuing]. Independent parties to do that?

Ms. HOPKINS. Certainly. API encourages and is supportive of research designed to provide useful and valuable information to regulatory agencies, a response—decisionmakers and affected communities. And, in fact, the industry has and continues to engage with research organizations.

The CHAIRMAN. OK, I appreciate that, thank you. Sorry to interrupt.

Chairman Lamborn.

Mr. LAMBORN. Thank you, Mr. Chairman. For either Ms. Hopkins, Mr. Williams, or Mr. Coatney, does the proposed well control rule create additional cost and bureaucratic red tape that is either, one, unnecessary, or two, would lead to the loss of future production?

Ms. HOPKINS. So, obviously, the rule was just released, published, a few days ago. So we are still currently reviewing the rule and all of its requirements and revisions to changes in the current requirements. There obviously is, as the agency has pointed out, a cost associated with implementing the new proposals. We will also be looking at that economic analysis that they have done, and providing our own information regarding the economics of the rule.

We will be looking at the provisions that they have proposed to ensure that they are provisions that will increase safety, and that

they will be of benefit, and not just a regulatory burden, as you mentioned.

Mr. LAMBORN. Either one of you two gentlemen want to comment on that? Mr. Williams or Mr. Coatney?

Mr. WILLIAMS. I would just add what I did before. I mean, like Ms. Hopkins said, we are going to focus on—does it benefit safety? And I know one provision in particular, relative to SEMS, is aligned with what we think is an important part of adding safety.

Mr. COATNEY. And, Representative, I believe all I would make a statement to is that certainly our members are reviewing the rule, as well, as it has come out, to understand its impacts. For deepwater well containment, our focus is primarily on the fit-for-purpose capacity of the capping stacks that were used. So, they are a slightly different use, if you will, than what the rule has.

Mr. LAMBORN. OK, thank you. Now, in the last 5 years, what did industry do on a voluntary basis, in addition to what the regulators in our government did to create more safety?

Ms. HOPKINS. So, thank you for the question. And more extensive details are in my written testimony, but immediately following the incident, the industry formed four joint-industry task forces to focus on operating procedures, operating equipment, subsea wall control and containment, and then oil spill preparedness and response. Each of those four joint industry task forces produced recommendations that were provided to the Department of the Interior. Many of those recommendations were incorporated into the Secretary of the Interior's safety report that was issued at the end of May in 2010.

Out of those recommendations came many revisions, a creation of new documents. So we created a new document on deepwater well design and construction. We created a new document on well construction interface, which is a bridging document between the operator and the drilling contractor. We revised our RP53, as I mentioned earlier, which was originally a recommended practice. We upgraded that to a standard, and that is on blowout prevention equipment systems.

In addition, we have begun revising, and in different stages along that, various equipment specifications on blowout preventers. We published a new document on procedures, and updated that, as well, into a standard at a later date. We put together a recommended practice for protected personal equipment for oil spill responders. So, we have done a number of, over 100 documents have been either created or updated since 2010 in response to this incident, and that was all voluntary.

Mr. LAMBORN. Thank you. And last, how do our safety standards compare to other countries that allow drilling off their coasts in the Atlantic, such as Mexico, Canada, Brazil, or even Cuba?

Ms. HOPKINS. The Gulf of Mexico does have a very strong safety—or, I am sorry, the U.S. Outer Continental Shelf and our regulations are a very strong regulatory framework. Many of the regulations are based upon API standards, and many international governments, as well, incorporate API standards into their regulations, as well.

Mr. LAMBORN. Would either one of you other gentlemen, Mr. Williams or Mr. Coatney, want to comment on that?

Mr. COATNEY. What I would say is that, in the well containment category, the developments that have arisen in the Gulf of Mexico applications, as a result of Macondo have been transferable to other entities around the globe, such that there are capping stacks located throughout the globe and organizations that are able to deploy that response solution in their applications.

Mr. LAMBORN. OK, thank you very much.

The CHAIRMAN. Thank you.

Mr. Huffman.

Mr. HUFFMAN. Thank you, Mr. Chairman. My question is for Dr. Murawski. The 5-year anniversary of this horrific oil spill has brought us some very slick television ads from British Petroleum, showing healthy wildlife and pristine waters, talking about the unprecedented mitigation efforts, suggesting that all is well in the Gulf.

But what we don't see are pictures of a place such as Cat Island, Louisiana. And I have a poster here, too. One is before the Deepwater Horizon spill on the left. So what you see there is a well-vegetated barrier island providing all sorts of ecosystem and hurricane safety services for that area. And on the right what you see is a completely de-vegetated and, actually, shrunken barrier island that has reduced in size, because all the vegetation was killed. The vegetation was holding the land in place, and it has begun to erode and, literally, disappear before our eyes.

Could you speak to this, and perhaps some other barrier island impacts that we don't see in those slick BP TV commercials?

Dr. MURAWSKI. Thank you for the question. I haven't been to Cat Island specifically, but I have spent a considerable amount of time in Barataria Bay, and places like Bay Jimmy, where, as Mr. Graves said, the oil still exists.

One of the phenomena we see there is that most of this oil exists a few feet into the marsh. And what has happened over time is, because of the toxicity of the oil, it actually kills the roots of the marsh grass, and the roots of the marsh grass are basically a matrix that keeps the land in place. So, we have seen accelerated erosion off of those marshes, as the marsh grasses died back. And that certainly is occurring in those places where it is most oiled, and probably occurring on these barrier islands, as well.

Mr. HUFFMAN. And when you see offshore islands like this literally disappearing because of that erosion, what does that mean, in terms of storm surge and potential impacts from events like hurricanes?

Dr. MURAWSKI. Well, honestly, you know, when we talk about the role that the natural world plays in environmental protection, and particularly hurricane protection, the so-called green infrastructure, this has been a very effective way to mitigate the effects of storm surge over time. And we see land use practices that have defeated that.

We can assume that, if this is the cause, that that would accelerate the loss of this, and degrade the green infrastructure protection that we see in storm surge.

Mr. HUFFMAN. I am also interested in something I read about just in the last week. In the wake of Hurricane Ivan, an offshore platform owned by Taylor Energy in the Gulf was toppled because

of a subsurface mudslide. Apparently, the apparatus down there was buried in so much sediment that, even now, more than 10 years later, it is still leaking, and neither the industry nor Federal officials nor anyone else has any idea of really, at this point, how they are going to stop it from leaking. I believe it is one of the longest-running oil spills that we have ever seen. And recent data suggested the volume of what has spilled is 20 times higher than the figure originally put forward by Taylor Energy.

What would be the consequences if an event like this, which, of course, the industry would like us to believe is no longer possible—but if it were to happen in a place like the Arctic, what would be the consequences, given how hard it would be, in a difficult location like that, to deal with an undersea leak in a very remote location?

Dr. MURAWSKI. I am familiar with the Taylor situation there. And, of course, what that is providing is a chronic moderate-level exposure that is out in the environment. And, as you said, the circumstances are so difficult, it is almost impossible to deal with.

In terms of the implications for an Arctic spill on those lines, the Chukchi Sea is a very difficult place, even without the drilling. So, the effects of a long-term spill like that would be probably devastating to the wildlife and the subsistence livings that people make on the North Slope.

Mr. HUFFMAN. Great. Thank you very much for your testimony.

I yield back, Mr. Chairman.

The CHAIRMAN. Thank you.

Mr. Hice, do you have some questions?

Dr. HICE. Thank you, Mr. Chairman. I appreciate each of you being here, and the testimony that you have given regarding the various changes that have been made in the last 5 years.

But, for the sake of the committee members, Mr. Williams, let me go to you. Would you expand some on the concept of stop work authority?

Mr. WILLIAMS. Yes, I would. So, it is another key part of safety and environmental management systems. But, basically, it says that every person has the right and the responsibility to stop work if they think something is unsafe, or they don't understand what is being done, that the work can be stopped. It is one of the key barriers that people are using right now in managing safety.

Dr. HICE. How often is that utilized?

Mr. WILLIAMS. I don't know, exactly. But it is not infrequent that people do it. And companies have really been pushing hard to change the culture, where people do want to do it. And, in fact, some companies are rewarding people that do it, even if it is subsequently found out that it wasn't necessary to do. They reward the behavior.

So, it is not infrequent, but most of it is not related to major safety items.

Dr. HICE. It is not related to major safety items?

Mr. WILLIAMS. That is correct.

Dr. HICE. So it is minor issues like what?

Mr. WILLIAMS. Well, I mean, a real common one is around safe lifting, for instance. So safe lifting is an issue, but often people actually find things in lifting operations, and then they stop them before it is a problem. So it is actually a good thing.

Dr. HICE. So, if companies are rewarding individuals for reporting unsafe environmental or—environment within the workplace issues, that would be a significant help on safety, overall.

Mr. WILLIAMS. Yes, sir.

Dr. HICE. You would certainly think so.

Mr. WILLIAMS. Yes, sir.

Dr. HICE. In addition to that, before I change the subject, can you comment a little bit on some of the investments—I will use that word—made by the industry to help improve safety?

Specifically, Ms. Hopkins, as you mentioned a moment ago on incident prevention, containment response, those types of things. I know you mentioned four areas. Let me, I will just direct this to you, Ms. Hopkins. You mentioned four areas. But can you just go more specifically on the investments made here, and the impact that is resulting from that?

Ms. HOPKINS. Unfortunately, I don't have any dollar figures that I can share with you. We know, at least in one instance, for the Marine Well Containment Company that was established, it was a $1 billion initial investment when it was started up. Obviously, that has increased over time.

You do have several million dollars that was spent, or that was budgeted, by the American Petroleum Institute specific to oil spill response studies and research. You also have the creation of the Center for Offshore Safety, and then, obviously, the membership dues are additional expenditures that have been made by the industry to improve safety.

So again, I apologize, I don't have an overall number. But, as you point out, in all of these areas investments have been made and have been——

Dr. HICE. So it is fair to say, though, that billions of dollars are being spent. It is not a small amount of money. So there is a significant investment to address these issues.

Ms. HOPKINS. Yes.

Dr. HICE. Let me ask you while I have you here. In my home state of Georgia there is conversation about the potential of offshore energy in the Atlantic. And so, with that, a lot of constituents are talking about it. Can you please comment on the benefit that offshore exploration would have in the Atlantic, as well as the degree of certainty that you would have regarding the safety of that operation, compared to, say, 2010?

Ms. HOPKINS. So, you know, the industry is committed to a goal of zero fatalities, zero injuries, and zero incidents. And we do believe that the offshore oil and gas industry is safer than it was 5 years ago. That would extend to the Atlantic, considering that the current OCS regulations apply to all of the OCS, not just the Gulf of Mexico, not just deepwater. So, all of the safety improvements that have been made would apply to any activities that were to occur in the Atlantic, and certainly the Arctic, as well.

We do have, very near our shores we see other countries—Canada, Cuba, and the Bahamas—pursuing or considering development of offshore oil and natural gas resources. And rather than sitting idly, and watching other nations secure these benefits, the United States should seize the opportunity and bring economic stimulus to the Atlantic Coast and our own economy.

Dr. HICE. OK. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Costa.

Mr. COSTA. Thank you very much, Mr. Chairman and members of the committee, and thank my colleague from California, Lois Capps, for allowing me to ask some questions. I have another appointment I need to get to.

Obviously, we have discussed here today, under the category of lessons learned, 5 years later, what we have done to deal with the challenges of deepwater exploration, and the definitions of deepwater exploration now, with new science and technologies, is far greater depth of drilling range than ever imagined, probably, 20 years ago. But with that comes risks, and we saw those risks, you know, in the worst way develop 5 years ago with the spill in the Gulf.

We, obviously, have a great deal of drilling activity taking place, and expansion of proposed drilling in various parts of the Atlantic and Alaska, as was noted.

I am wondering, Mr. Williams and maybe Ms. Hopkins, what the takeaway is here. I mean we have seen the changes of how the Department of the Interior has implemented both safety standards on the drilling safety rule, workplace safety rule, blowout preventers, production safety rule. Supposedly, one person can stop a production well if they believe something is amiss.

Under the category of lessons learned and takeaways, what would you say was the greatest? And can you imagine in the future—the environmental impacts, obviously, in the Gulf are still being felt. But what would you describe, Mr. Williams, under the category of lessons learned, notwithstanding the changes in the—I had been one that had argued for years we ought to change the Mineral and Management Services, and obviously, the Administration did do that. Is it operating better now, under the new reorganization?

Mr. WILLIAMS. They have put a very significant effort into managing across the new organizations. That was part of the work that they did when they divided up into the three groups. And I think, for them to do a good job, they need to make sure they ensure that and do that effectively.

Certainly, the focus of BSEE on environment and enforcement, the interaction with me in that regard, has been good.

Mr. COSTA. Do you think the enforcement has been strong?

Mr. WILLIAMS. I think the enforcement has been strong. But what I would say is that I think one of the—the key thing that I am focused on is making sure that people have the effective planning, and keep their barriers in place, and manage safety, and that we have methodologies for measuring the effectiveness of that.

Mr. COSTA. And provide the oversight.

Mr. WILLIAMS. Correct.

Mr. COSTA. Ms. Hopkins, you commented a moment ago on the previous questioning that, with the expansion, or proposed expansion in the Atlantic and Alaska, that these lessons that we hope have been learned will be applied, and these new safety rules will be in place for any further expansion or drilling. Is that correct?

Ms. HOPKINS. Correct.

Mr. COSTA. And what is the takeaway for your industry, in terms of 5 years later, and the coordination and the response by energy companies to what was a very devastating accident that—11 lives were lost and, obviously, the changes have occurred in the industry.

Ms. HOPKINS. So, yes, there have been extensive changes that have occurred in the industry. As you mentioned, the industry came together jointly across all segments, operators, drilling contractors, service supply companies, equipment manufacturers——

Mr. COSTA. Is it true within any of your companies that one person on a rig can halt production because something may be amiss?

Ms. HOPKINS. So, as Mr. Williams referred to, the stop work authority and the safety and environmental management systems rule, yes.

Mr. COSTA. Any other suggestions, you think, in looking down the road, that we can do a better job?

Ms. HOPKINS. We are always looking to continuously improve safety.

Mr. COSTA. Under best management practices?

Ms. HOPKINS. Yes.

Mr. COSTA. And how do you do that?

Ms. HOPKINS. Well, the API develops standards accredited by the American National Standards Institute. Our process is audited every 5 years by ANSI. It is based on openness, balance, consensus, and so we follow that process to ensure that our standards, and they are regularly updated on a 5-year review cycle, we ensure that those recommended practices, standards, and specifications do keep up with current technologies, and are reviewed every 5 years.

Mr. COSTA. All right. My time has expired. Thank you, Congresswoman Capps, for your kindness. And thank you, Mr. Chairman.

The CHAIRMAN. Actually, I am the one that recognized you, not her.

[Laughter.]

Mr. COSTA. Well, I was thanking you, too.

The CHAIRMAN. OK. I will just——

Mr. COSTA. I always thank you.

The CHAIRMAN. Just so we get that in the record.

Mr. COSTA. No, I want it on the record. Thank you, Mr. Chairman.

The CHAIRMAN. Mrs. Capps, go ahead.

Mrs. CAPPS. I will give you all the credit that you would like, Mr. Chairman.

[Laughter.]

Mrs. CAPPS. You know, we have already talked about the Deepwater Horizon spill, one of the worst environmental disasters in our history. And it superseded the previously worst spill, which is off the coastline I represent, in 1969, in Santa Barbara, Platform A burst, and devastation was enormous.

I know that it can take, because I live there in that area, and I did at the time, I know it can take decades to fully recover from an oil spill of this magnitude.

The Gulf's famed oyster industry still has not bounced back from the damage caused by the spill. And research shows that other fishery resources may have been impacted in the long term. This

includes our red snapper stock, which virtually lost its entire 2010 and 2011 year classes.

Dr. Murawski, what have been the impacts of the spill on Gulf fisheries and fishing communities, including the offshore and near-shore habitats that support them?

Dr. MURAWSKI. Thank you. The impacts on the fisheries have been varied. We hear a lot of reports on the local scale, particularly in the near-shore areas, where fisheries for crabs, oysters, and the other critters, some of those areas are closed today because of the presence of oil. So that can have a significant impact at the local community level.

When you look at the Gulf of Mexico level, many of the industrial fisheries actually can move around. You know, for example, a shrimp fishery, because of the large closure due to seafood safety concerns, that moved off to Texas. And so the landings in Texas increased, but that reduced the volume of shrimp coming ashore in Louisiana, and particularly Alabama and Mississippi, that had their landings cut by half.

So, in that regard, we see a mobile workforce that is more resilient than a local community, in terms of their fisheries. And that seems to be the way things are playing out.

You mentioned oysters before, and it is an important point to make. If you look at the total level of oyster production in the Gulf of Mexico, it is about what it was before the spill. But what has happened is there has been a major switch between the oyster production from natural beds, as opposed to aquiculture. So, aquiculture production in Louisiana has increased dramatically, and we have many reports of the natural oyster populations being depressed.

Mrs. CAPPS. We know that the Deepwater Horizon spill caused billions of dollars of damage to the Gulf Coast economy, and that efforts to clean up just the most visible damage from the mess will cost billions more.

We also know that there are ongoing costs in terms of lost fisheries, productivity, diminished coastal resiliency, and human health.

So, another question to you, Dr. Murawski, isn't it true that scientists are still uncovering new impacts of the spill on the Gulf ecosystem that it may be years before we can fully understand the impact, economically, of these many different kinds of costs?

Dr. MURAWSKI. That is true. And, as I said in my verbal testimony, it took quite a while for us to realize the full implications of Exxon Valdez: the collapse of the herring stock in Prince William Sound. And, as you mentioned, we have seen repeated year classes of red snapper in the Eastern Gulf declining. It was an improving stock. It's improving in the Western Gulf, but the recruitment seems to be declining in the Eastern Gulf.

We also know that there is a substantial fraction of that oil that is still in the environment, and so it is still having impacts. So, it really is premature for us to conclude things on the sort of macro level——

Mrs. CAPPS. Right.

Dr. MURAWSKI [continuing]. At this point.

Mrs. CAPPS. And, as I conclude my time, Mr. Chairman, even as BP released its 5-year report hailing its efforts to clean up its own mess, others were shining a light on all the damage that remains unrepaired and undiscovered.

I would like to submit for the record a National Wildlife Federation report titled, "Five Years and Counting." This report documents ongoing damage to the Gulf natural resources resulting from the BP spill. Everything from brown pelicans to bluefin tuna to sperm whales has been harmed by this spill. And we, according to this study by the National Wildlife Federation, we are a long way from restoring the Gulf ecosystem.

This is an ongoing problem, and we must continue working on it. I hope we can revisit this topic, and I yield back.

The CHAIRMAN. Thank you. Without objection, we will add that to the record, as well.

Mrs. CAPPS. Great.

The CHAIRMAN. I know the Ranking Member has a couple more questions, but let me have a shot at a few of them, here.

Mr. Coatney, if I can start with you, who invented the capping stack technology. Was it the government?

Mr. COATNEY. No. The capping stack technology was a collaborate effect of the industry participants that are operating in the deepwater environment.

The CHAIRMAN. The company consortiums. Who paid for it? Was it the government?

Mr. COATNEY. No, sir. It is paid for by the members themselves, the industry members themselves, and those of the consortiums.

The CHAIRMAN. So it was an industry-driven innovation that came up with this technology that your company employs to make the shores safer.

You said that you are a resident of the Gulf area, so I am assuming you take all of this very personally.

Mr. COATNEY. Yes, sir. I must admit I do. Fourth-generation family member of southwest Louisiana, my members have been there for a long time, and I have walked the marshes and very much enjoy them. Therefore, I do want to protect them.

The CHAIRMAN. Thank you. So if there were an incident tomorrow, could you spend maybe a minute of my time and walk us through how your company would work to deploy that capping stack?

Mr. COATNEY. Yes, sir. What would occur is that the responsible party, the operator that was having the incident, he would make a call accordingly to regulatory agencies, as he is compelled to do. But as for containment, he would make a call into a central number. That number would contact key people at any point, 24 hours a day.

They then—with HWCG as an example, HWCG personnel would then interface with the operator himself, as the responsible party, and initiate actions upon his guidelines to basically effect a movement to get equipment moving and resources moving, to include an incident command facility where the source command services would occur from, to mobilizing a capping stack with some initial protocols of testing the capping stack prior to loading it on to a vessel, and then transporting it to the site, at which time, once it got

on site, along with ancillary equipment that would be there, that would be landed on to the well that was experiencing the problem, and then other vessels that will have been mobilized simultaneously would be put there to effect capture, to the extent that it had to flow and could not be shut in effectively and safely at the time, to capture the flow and put it in storage.

The CHAIRMAN. Thank you. I appreciate that. I am an old history teacher. I almost understand what you were telling me. That was good.

Ms. Hopkins, Mr. Williams, you know, Plato said that necessity is the mother of all inventions, and we saw after Macondo innovations that came from the industry as a necessity for that. Could you just speak very quickly, each of you, to some of the reforms industries have realized right away in the wake of Macondo, and how you put them into place and work with the Federal regulators to bring safety to this issue?

Let me start with Ms. Hopkins and Mr. Williams.

Ms. HOPKINS. OK, certainly. So, as I mentioned, the four joint industry task forces were formed. Recommendations were made, both to the government and then within the industry itself. Several, as I mentioned, over 100 API-recommended practices, specifications, standards have either been created or revised since the incident.

In addition to those standards and documents that were created, we obviously created the Center for Offshore Safety, which I will let Mr. Williams speak to, and then, obviously, the containment companies, HWCG and MWCC, and I will let Mr. Coatney speak to that.

Additionally, we did spend a great, as I mentioned, a number of millions of dollars on oil spill preparedness and response—over 25 different work groups were created.

All of that information is available on our Web site. It does include dozens of reports that have been developed on dispersants, mechanical recovery, in-situ burning, all of the different tools in the toolkit related to oil spill response. So a great deal of work has been done to improve safety and in terms of, also, prevention, most importantly, but then containment and response, if we do have an incident.

The CHAIRMAN. Thank you. Mr. Williams, look, I only have 13 seconds. So I am going to have another round, I am going to come back. That will be the first question I ask. Is that OK?

Mr. WILLIAMS. Yes, sir. Thank you.

The CHAIRMAN. All right, thank you. Mr. Grijalva, do you have some more questions?

Mr. GRIJALVA. Excuse me, Doctor, following up on some of the questions that were being asked by Mrs. Capps, during the BP spill, emergency responders—and I was asking about that earlier—used an unprecedented amount of dispersant to keep the massive oil slicks from forming and then going to the surface and coming ashore. We know these chemicals made the oil less visible, but it didn't make it go away, it didn't make it disappear.

The questions I have—where is this dispersed oil? And what effect is it having on the marine environment? That is number one.

Do we know what the effect of these chemicals, these dispersants are, what the impacts are, long-term? And do we not know? And

do you think it is wise for oil companies to assume that dispersants are the answer to mitigating the damage from an oil spill?

Dr. MURAWSKI. Sorry, let me take the middle question first. In terms of the impacts of dispersants, dispersants are tested with EPA criteria and protocols. EPA is actually revising, taking comments on a revised rule on those testing procedures.

The types of testing they do are to something called the lethal dose 50. That is, at what point do you have a dose that kills 50 percent of the test animals? One of the issues that recurs is the test animals that are used in these standardized tests are not necessarily the most sensitive animals in the real world, particularly in the environment that they were used in the Gulf of Mexico.

We know that, for example, fish eggs and larvae and the larvae of deep corals are much more sensitive to low levels of both oil and dispersants. So, if one really wanted to understand the toxicity of those chemicals, one would do it in a more realistic setting.

The other thing about dispersants is they are what we would call a mildly toxic detergent, right? Taken by themselves, they have certain levels of toxicity, which are considered to be low, and lower than the crude oil. But taken as a binary, the oil and the dispersant itself, they act in combination to create much more toxic mixes, and there have been a number of experiments done since the Deepwater Horizon spill to indicate that.

In terms of the use of dispersants and what consequence it had, as far as the oil goes, as I said before, we know that a substantial amount of the oil lies trapped at the bottom of the sea, due to this marine snow event. We also know that there is oil at the toes of many of these beaches that is bound up with sand. And so, every time there is a large storm in the Gulf, we see tar balls and tar mats coming to shore. And we also see some of the oil in the marsh, as well.

In terms of the dispersants, the individual components degrade rather quickly over time. There are some components that are more persistent. But they are generally, by themselves, not particularly toxic.

In terms of the industry's response in using dispersants, we need to be quite discriminate in their use, particularly since we don't know some of these questions about the impacts on real-world organisms. Certainly the theory there is you are trying to break up oil droplets into tiny bits that are more easily digested by bacteria, and that certainly worked. The real question is, what is the environmental trade-off, fighting those oil spills offshore, as opposed to fighting them on land? And it really is a Hobson's Choice that we have.

Mr. GRIJALVA. Let me follow up on that. I think a study published in February, where massive spill deposits had been recovered, that between 6 and 10 million gallons of BP oil remains in the floor of the Gulf, or just beneath the surface of the lands and the waters around the Gulf Coast. What does that mean for future cleanup, and what does that mean for future restoration efforts?

Dr. MURAWSKI. The offshore oil—there is no effective way to clean up what lies on the bottom. Much of that is quite deep, and it is somewhat dispersed over a 1,000-square mile area. Trying to clean that up would do more damage than letting it rest and even-

tually landfill, you know—that is sediment deposits over the top of it. It will keep having impacts on the biota there.

And we know this because we have sampled down off Mexico, where the Ixtoc spill was, 35 years ago, and we see that Ixtoc spill in deepwater landfilled under about 4 inches of sediment. Interestingly, it is still intact, because the biota there does not bioturbate, or actually use that sediment, because it is still toxic.

The CHAIRMAN. Let me interrupt here for a second. Do you still have other questions?

Mr. GRIJALVA. No.

The CHAIRMAN. Does anyone else have other questions for this final round?

[No response.]

The CHAIRMAN. Then, if not, do you want a couple more seconds to finish the answer?

Mr. GRIJALVA. Yes, the——

The CHAIRMAN. Finish that one.

Mr. GRIJALVA. On the lands—if I may, Doctor, the lands and the shores, what does that do to cleanup and restoration efforts?

Dr. MURAWSKI. Honestly, when oil gets into the marsh, there are no effective cleanup mechanisms you can use——

Mr. GRIJALVA. OK.

Dr. MURAWSKI [continuing]. That you wouldn't do more damage to the marsh, than if you let it rest there. And, of course, it will weather over time. But, as I said before, it takes quite a while for that to weather out.

Mr. GRIJALVA. Thank you.

The CHAIRMAN. All right. I have two more questions for Mr. Williams and Mr. Murawski. Let me go to him first, and then I will come back to the original one. And I have an additional one for you, as well.

Mr. Murawski, you wrote an editorial—I think it appeared on Friday—talking about, and you mentioned part of it here about the baseline, but also the paying for studies that are proposed, and that you proposed that the industry should pay for those studies as they go on.

What about people—about things like stormwater, agricultural/industrial run-off, excess development, overfishing, the dead zone, municipal/industrial discharges that have some kind of impact? Do they get a free pass, and only the deep pockets of the industry are the ones that should pay for this?

Dr. MURAWSKI. Well, the editorial that we had in the *Tampa Bay Times* basically looked at the principle of polluter pays.

And, you know, one of the interesting things about this is——

The CHAIRMAN. So these other people should be paying, as well, in your mind?

Dr. MURAWSKI. Well, certainly, in terms of inshore pollution, we know that, for example, water treatment facilities need to pay their monitoring costs, as well.

The CHAIRMAN. So you are calling for them, as well.

Dr. MURAWSKI. Well, most of them actually do. I guess my point with the offshore industry is that we have constant reference to, well, it's a dirty Gulf, and so, therefore, it was dirty before the oil spill, and it is hard to figure out. The only way we really can un-

derstand that is to try to have some baseline information. And, frankly, I think it is in the industry's best——

The CHAIRMAN. I appreciate that. I am not arguing about the baseline, it is just who should be paying for this? Do we have a deep pocket industry that you feel should be paying for it?

But maybe even more less who pays for it, I am assuming, becomes insignificant. I am assuming you don't believe that the quality or the results of the research would be anyway flawed because of who was paying for this, or who does not pay for it. If the industry were to fund your research, as they are doing, I don't think you are arguing that that would have a flawed impact on your research results, would you?

Dr. MURAWSKI. I think it bears thinking about how you set up the independence of the research. You know, certainly, you have situations where industry can pay to have these done by certain consulting firms under the guidance of the government——

The CHAIRMAN. You are telling me you could be bought off?

Dr. MURAWSKI. Sorry?

The CHAIRMAN. Are you telling me you could be bought off?

Dr. MURAWSKI. No, sir.

The CHAIRMAN. OK.

Dr. MURAWSKI. What I am saying is that they can be done under certain standards and replication of samples, et cetera.

The CHAIRMAN. OK. Well, let me go back to Mr. Williams, then, if I could.

Go with the original one. I cut you off and you didn't have enough time to deal with that. Some of the reforms have been put into place.

Mr. WILLIAMS. Yes, sir. So, the Center for Offshore—the regulation did change, where the companies were required to have SEMS. You know, many companies already had SEMS in place. But what the industry voluntarily did and put in place was create the Center for Offshore Safety, create this place where we could collaborate, work together, learn together about how to make things better.

We also developed the audit protocols, we developed the auditor qualifications, we did the auditor certification. All of this was done by the industry voluntarily, plus other indicators on the effectiveness of management systems. And those all have been collected, and go into an annual report as we learn about these systems, learn how to make them better.

The CHAIRMAN. So I am intrigued by that, because there are some voices out there that would say that this sort of interaction degrades safety. But what you are talking about is the impact that comes from the collaboration process that actually moves us forward.

Mr. WILLIAMS. Yes, sir.

The CHAIRMAN. And I think it was kind of what Costa was starting to ask you about here. There is what we are hoping for, some kind of balance, as we deal with the issues of safety, as we also deal with the issues of how can we be productive in this area, and we can move forward in that. It seems, as in the past, we are looking as if we are moving in that direction. But maintaining that balance is always a difficult task to do.

I am making the assumption we can't legislatively say, there will always be a balance in here. What is important is making sure that the industry has an active voice, and the industry becomes a part of it. And I think you have all demonstrated how the industry comes up with innovations, even ahead of where the agency comes up with regulations. And I am assuming that is part of what you are telling me with your testimony today.

Mr. WILLIAMS. Yes, sir. And one of the key things, in fact, we work on is this balance, particularly this balance between prescriptive and performance-based safety, and between personnel safety and safety management systems. And it is all about making the technology and the standards and the safety management work together to deliver a safe result.

The CHAIRMAN. And I am assuming you have some kind of incentive for doing that within the industries, as well.

Mr. WILLIAMS. Yes, sir.

The CHAIRMAN. OK. I thank you for that. With that—I have to go to my last line. There are magic words I am supposed to say right now. And until I find out what my magic words are, I do want to thank all four of you for coming great distances and being with us today, and for your testimony.

And there may be other, here it is—there may be other questions the witnesses will be asked from other Members in writing. And, once again, we have 10 business days for these responses.

Once again, I do appreciate your time and willingness to be with us. Thank you so very much. I appreciate the committee's interest. We will be talking about these issues again in the future.

And if there is no other business, without objection, the committee stands adjourned.

[Whereupon, at 12:12 p.m., the committee was adjourned.]

[ADDITIONAL MATERIALS SUBMITTED FOR THE RECORD]

[LIST OF DOCUMENTS SUBMITTED FOR THE RECORD RETAINED IN THE COMMITTEE'S OFFICIAL FILES]

—National Wildlife Federation Report—Five Years & Counting: Gulf Wildlife in the Aftermath of the Deepwater Horizon Disaster

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